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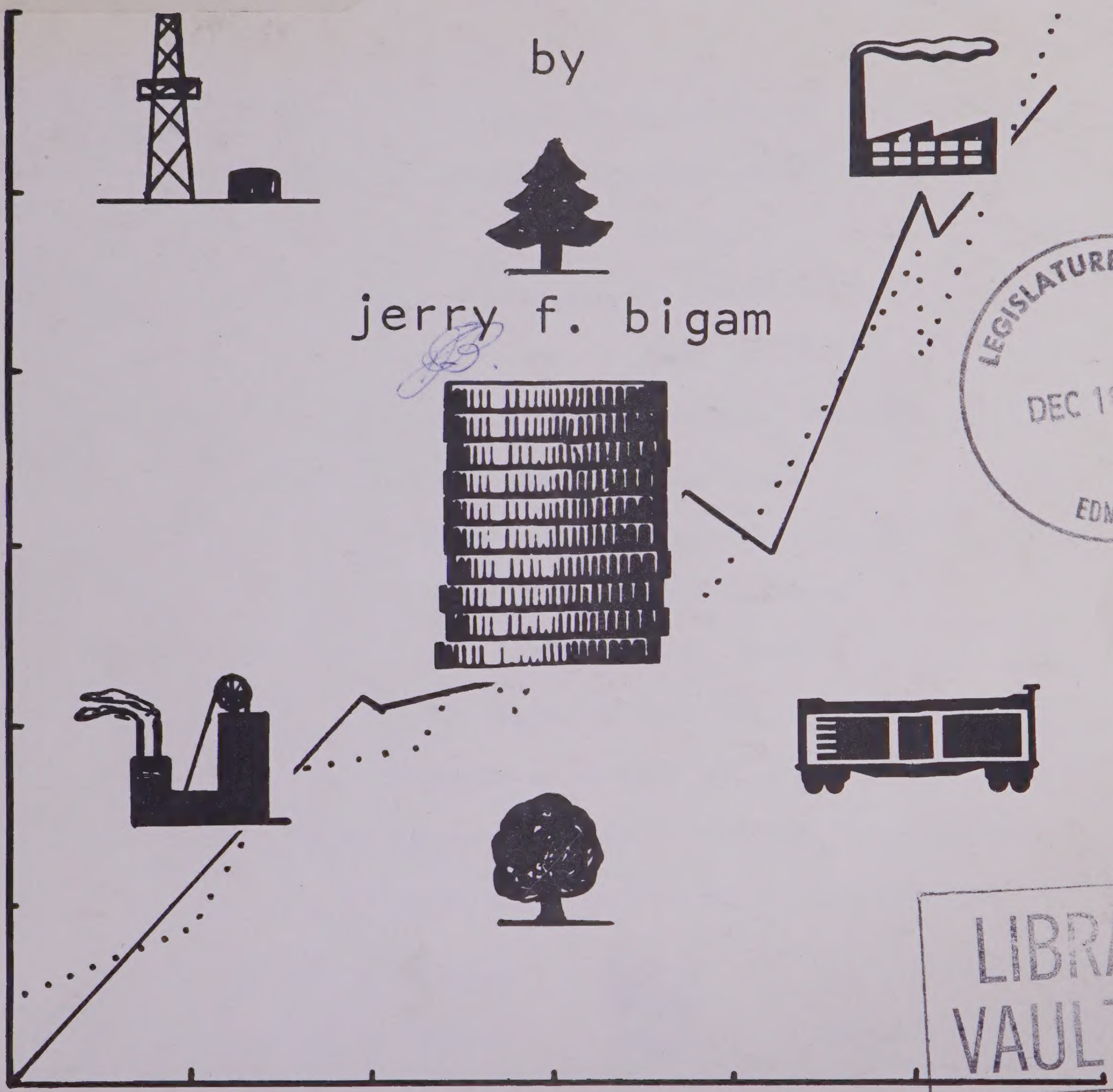

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INDUSTRY AND RESOURCES

ALBERTA'S CENSUS DIVISION 15

By

Jerry F. Bigam

The

Rural Development Research Branch,

Economics Division,

Alberta Department of Agriculture

V. T. Janssen, Branch Head

September 27, 1968

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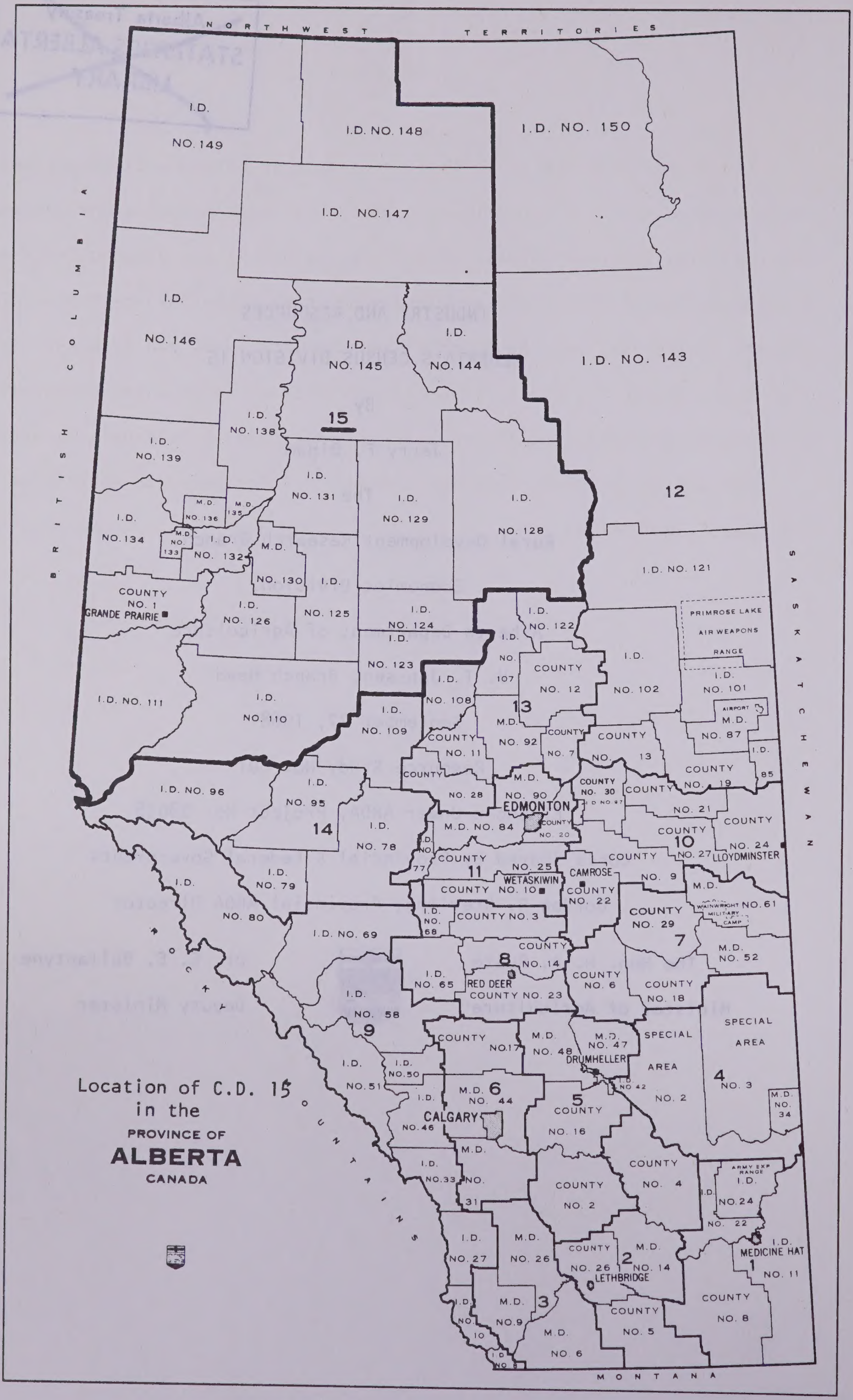

Location of C.D. 15 in the PROVINCE OF ALBERTA CANADA

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Jerry F. Bigam

PREFACE

From the outset, socio-economic development in Alberta has been self-generated by the people and the role of government has been to provide a framework which would maximize progress. As development took place, the interactions of physical, social and economic factors within various regions of the province resulted in erratic advances toward development goals. Some regions advanced more rapidly than others.

Regional disparity is not a provincial problem but a national one and because of its nature, the problem cannot be solved by local people alone. By the nineteen sixties, it was evident that all levels of government had to play a more active role in development planning. The 1961 conference on Resources For Tomorrow, at which many authorities delivered papers on the subject of regional disparity, highlighted the 'gap' between actual and potential development. By 1961, the Agricultural Rehabilitation and Development Act was passed by the federal government. The philosophy of this act was to put government in a more active position with regard to development of rural areas. Co-operation between all levels of government and the people who would be affected is also a facet of the act's philosophy.

This publication is one of a series of inventories, containing information gathered mainly from secondary sources. It was designed in response to the need to assess the local situation. It may be used by those interested in development as a working paper to analyze the local situation and to recommend ways of attaining developmental goals.

Knud Elgaard,
Assistant Director,
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SUMMARY

1. Forest output increased 78% from 1960 to 1966 and the outlook for further expansion is good. One pulp company is presently involved with intensive feasibility studies of a pulp mill south of Grande Prairie. Another company is planning to build a pulp mill on the southern boundary of C.D. 15 in the early 1970's
2. From 1956 to 1966, crude oil production increased by 2,400%; natural gas withdrawals by 1,700% and natural gas liquid production from almost nothing to over 650,000 barrels. A further large expansion of natural gas production will occur in the next 2 years when a natural gas pipeline will link the Marten Hills field to the Chicago market.
3. As well as timber, oil and gas, ample reserves of coal, gypsum, salt, bentonite and iron ore are located in the area. Present plans include the construction of sulphur extraction plants in three sour gas fields.
4. The fishing catch declined substantially from the 1961 level, with the total receipts dropping by almost 30%.
5. Fur trapping activity has been declining.
6. Manufacturing output increased rapidly from $3.0 million in 1956 to $9.6 million in 1966.
7. Construction indicators exhibited an accelerating trend from 1956 to 1966, but fell off slightly in 1967.
8. Trade and service statistics showed improvements relative to both Alberta and previous years. Per capita figures for C.D. 15 lagged somewhat behind the Alberta figures, although the gap closed somewhat between 1951 and 1961.

9. Income statistics point out that non-farm family income was below the Alberta average by 22%. Non-farm single people earned an average income equal to 84% of the Alberta average.

10. The farm population has the greatest relative income differential between the census division and provincial averages. The average farm income (including off-farm work) amounted to $6,795 in Alberta and only $3,960 in C.D. 15.

11. In all income divisions (i.e. non-farm family, farm, etc.) the income distribution showed that proportionally more people were in the lower income categories, and proportionally fewer in the higher categories.

INTRODUCTION

The industrial structure of an area depends on many historical and physical factors. However, in most regions there are three distinct industry groupings: primary, secondary and tertiary industries. Primary industry includes all firms which are engaged directly in exploiting the natural resources in the area, and includes such activities as farming, logging, mining, and fishing. Historically, economic development begins when people move into an area to use the natural resources available. Tertiary industry, which provides services for the firms and their employees, gradually evolves to satisfy the requirements of those employed in the primary industry. Secondary industry, which can be thought of as using output from the primary sector as inputs in their own production, is relatively independent and is not necessarily a natural outgrowth of progress in the primary sector. If secondary industry develops, then enlarged and/or additional tertiary industry will be set up to service the needs of the people employed in the former.

Census Division 15 is an excellent example of what could be called a 'model' industry development. The first industry to be established in the area was fur trapping. With the desire to bring in as many trading goods as possible with each canoe trip, demand for locally grown food arose. This marked the beginning of agricultural development. As more and more settlers journeyed into the area, roads and railroads were built both to open up new territory and to serve the more settled areas. Railway construction created a demand for railway ties. Similarly, the new settlements established a demand for construction lumber, particularly in the towns of the area. At the same time, the railway provided a route for supplying lumber to centers outside the area. Accordingly, the forest industry expanded. At a later time, dairy output increased, demand increased and creameries and pasteurizing plants were built. Many villages were established to satisfy the needs of the farmers and lumbering people for goods and services. Recently, oil and gas fields were discovered and this further stimulated the growth of the service or tertiary sectors.

Primary Industry in C.D. 15 includes the following:

1) Agriculture
2) Mining (including oil and gas)
3) Forestry (logging)
4) Commercial Fishing
5) Fur Trapping

At the present time, agriculture is perhaps the most important industry in the census division. Certainly for most of the past years, agriculture has been mainly responsible for economic progress in the area. The attraction of free land under the Homestead Act combined with the Federal Government's desire to populate the area, brought many people to the region during the early years of this century, particularly from 1911 to 1921. Thus, agriculture produced most of the wealth in the area and provided the first economic base in most of the region. However, during the past few years, the farm population has been declining relative to the total, comprising 56% in 1951, 50% in 1956, 42% in 1961 and 39% in 1966. Still, agriculture provides the most employment and produces the second largest dollar volume of goods in the primary industry. Even though development in other industries is providing more diversification within the economy, the prosperity of the majority of people is still tied directly or indirectly to the agricultural situation.

In more recent years, the petroleum and forest industries have expanded rapidly and provided more employment opportunities and income for the area's population. It is essential for these industries to expand further to produce a more balanced economy.

AGRICULTURE See Agriculture in C.D. 15 by Rural Development Research Branch for a detailed treatment of this industry.

FORESTRY *

The forest industry has played a prominent role in the economy of C.D. 15 with numerous logging camps, sawmills and planer mills operating throughout the census division. To the present time, almost all of the activity has been carried on during the winter months, (November to April) when the muskeg is frozen and access by equipment is possible. Forestry has provided a complimentary occupation for many farmers, fishermen and construction workers during the winter months, and sawing and planing operations have extended employment for some into May and June.

Until around 1963, the industry was characterized by fairly small, often portable, sawmills and planers which operated only during the winter, but during the past five years, centralized and permanent sawmills and planers have been established as logging practices have changed substantially. The introduction of wheeled skidders, large logging trucks and the economic advantages associated with large mills has resulted in tree-length logging operations. Instead of sawing logs at a location adjacent to the logging berths, the tree-length logs are skidded to a collecting site, loaded onto trucks and hauled to the sawmill-planermill complexes. There still remain a number of smaller sawmills,producing less than 3 million board feet annually, but year by year their numbers are decreasing.

Timber production in C.D. 15 has fluctuated widely in terms of both value and physical output although the long-term trend has shown an overall increase. The following table outlines these changes for the fiscal years from 1960 to 1967. The figures refer to the value of logs delivered to a mill site and do not include any sawmilling costs.

---

* In the following section MM = 1 million

Table 1 TIMBER PRODUCTION IN C.D. 15 FROM CROWN LANDS
1960 - 1967

Fiscal Years [1]	Value ($000)	Constant Dollars [2] ($000)	Volume (000 fbm)
1960-61	5,557	5,835	161,983
1961-62	7,825	8,451	218,744
1962-63	8,556	8,907	221,165
1963-64	11,706	11,893	296,634
1964-65	10,391	10,318	256,894
1965-66	8,872	8,606	237,503
1966-67	11,225	10,439	285,724
1967-68	n/a	n/a	266,388 [3]

From the above table, it is evident that production, both in terms of value and volume, rose steadily to a peak in 1963-64. The large expansion in 1963-64 was attributable to the implementation of the quota system in that year as operators increased their output in an effort to earn a larger quota for subsequent years. Since then, production figures fell from the peak values and have remained about 10% below that level. The constant dollar series of the same table reduce the effect of price increases over the years, illustrating that in real terms the value of output dropped about 25% from 1963-64 to 1965-66 and recovered somewhat in 1966-67. The large decrease in 1965-66 was partly a result of a labour shortage in the area as many of the usual lumber workers took jobs in the Rainbow Lake Oil development.

---

[1] Ending March 31.

[2] Based on 1956 = 100.

[3] Estimated.

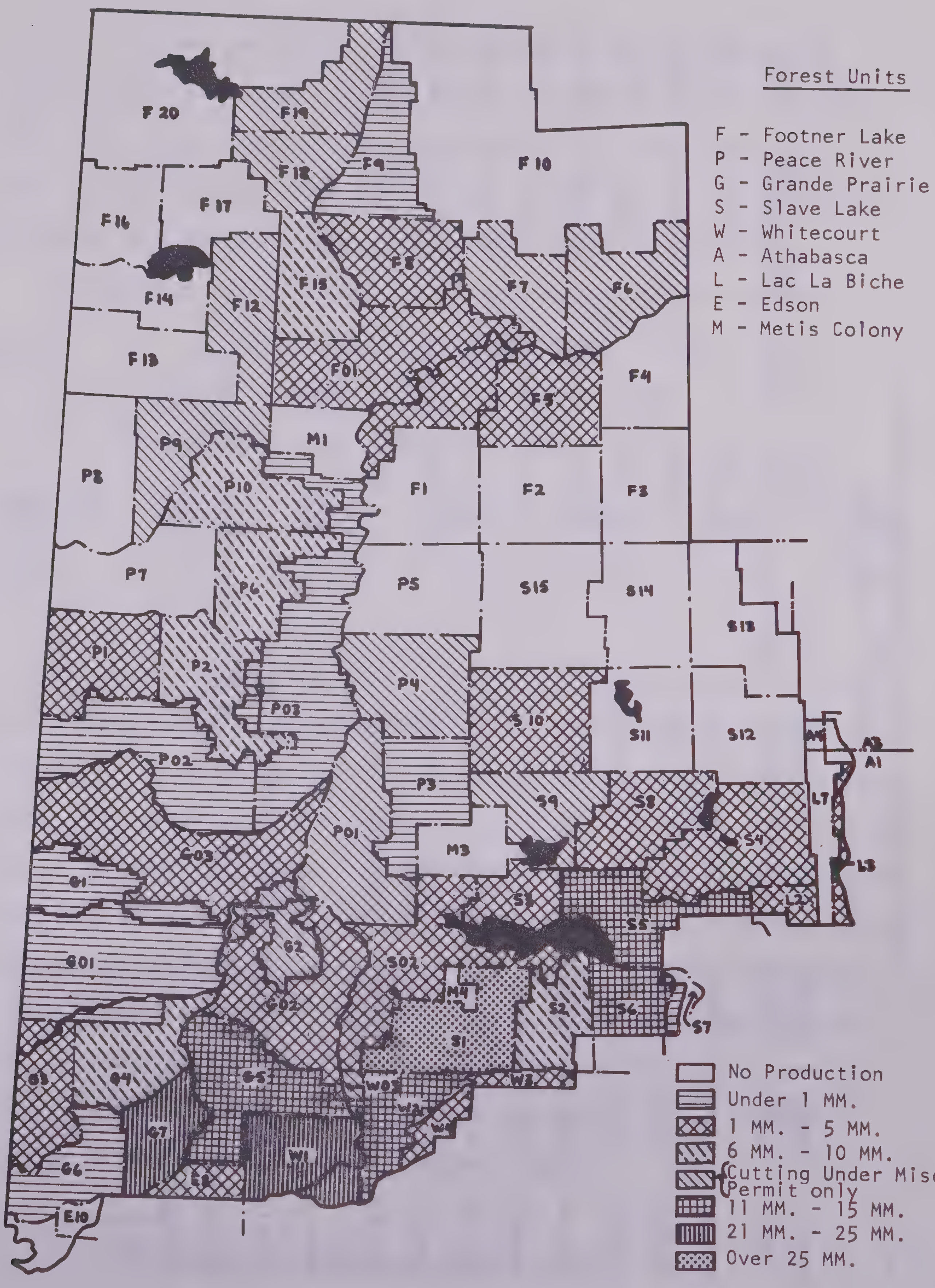
The vastness of C.D. 15 is illustrated by the eight forests which lie wholly or partially within its boundaries. Three forests - Grande Prairie, Footner Lake and Peace River - lie completely within the boundaries, Slave Lake Forest lies almost completely within its boundaries, while small areas of the Athabasca, Lac La Biche, Whitecourt and Edson Forests lie within the confines. The map on the following page outline the areas included and the table below shows the area by forests.

Table 2 TOTAL FOREST AREA - C.D. 15

	Area in C.D. 15 (000 acres)	Total Forest Area (000 acres)
Slave Lake	13,206	15,638
Grande Prairie	9,019	9,019
Footner Lake	20,465	20,465
Peace River	13,182	13,182
Athabasca	94	15,026
Lac La Biche	651	10,214
Edson	1,476	6,029
Whitecourt	2,079	7,286
	60,172	96,860

Table 3 shows the timber production by forest. A number of differences in output are evident from forest to forest. The Peace River Forest maintained a fairly constant level from 1960 to 1967. Production from the Grande Prairie and Whitecourt Forests more than doubled during the same

Figure 1 AVERAGE ANNUAL TIMBER PRODUCTION IN C. D. 15[1/]



[1/] (10) Average Annual Production from April 1, 1960 to March 31, 1967.

Table 3

TIMBER PRODUCTION VOLUME BY FOREST AREA WITHIN C.D. 15
1960-67[1/] (In 000 fbm)

Fiscal Year	Slave Lake	Grande Prairie	Footner	Peace River	Athabasca*	Lac La Biche*	Edson*	Whitecourt*	Total
1960-61	67,391	34,944	4,162	28,490	-	1,247	-	25,749	161,983
1961-62	70,231	66,004	3,115	32,214	-	8,388	-	40,016	218,744
1962-63	79,301	63,531	4,135	34,658	-	3,200	-	38,342	221,165
1963-64	99,719	85,696	9,675	35,089	-	3,010	2,289	61,156	296,634
1964-65	85,414	66,315	17,268	32,234	-	1,551	4,424	49,687	256,894
1965-66	70,336	57,665	28,058	24,318	-	2,345	1,700	53,082	237,503
1966-67	81,383	79,336	28,047	30,220	-	5,234	207	61,296	285,724
1967-68	68,123	77,271	29,898	26,096	-	5,000[2/]	-	60,000[2/]	266,388

---

* Includes only those regions lying within C.D. 15.

1/ Average annual cut from 1954 to 1959 for C.D. 15 is estimated at 197,300,000 fbm.

2/ Estimated

3/ (10)

period. The Slave Lake Forest showed the greatest yearly fluctuations, while in the Footner Forest, output expanded rapidly to reach a constant level, as a direct result of the construction of the Great Slave Lake Railway. No production came from the Athabasca Forest and only relatively minor amounts were produced from the Lac La Biche and Edson Forests.

The value of sawmill output is estimated in the following table.

Table 4 VALUE OF SAWMILL PRODUCTION ($000)

1956 [1]	1957	1958	1959	1960
8,290	7,073	5,611	6,582	6,137

1960/61 [2]	1961/62	1962/63	1963/64	1964/65	1965/66	1966/67
6,950	9,290	10,110	13,618	12,340	10,570	11,995

The value of sawmill production fluctuated from 1956 to 1966. However, the overall trend was rising even after allowing for inflationary price increases. It is to be expected that production will increase until the mid 1970's, due mainly to further expansion in the Footner Forest. By that time most of the remaining quotas will likely have been sold and production will range from $20-25 million annually (1966 prices). This estimate should be taken as a minimum since a pulp mill will likely be located in the Grande Prairie Forest by 1971 and a sawmill producing around $3 million annually will be a part of the operation. Also, greater demand for poplar lumber could increase the production value, since the $20-25 million estimate includes a very small allowance for poplar lumber.

1/ D.B.S.; Manufacturing Industry of Canada, 31-207.

2/ (10)

In 1966, there were 114 sawmills operating in C.D. 15. Of these, 104 operators were cutting under the usual quota regulations and 10 were classed as custom operations and were cutting mainly on patented land. These mills ranged in size from the smallest operation producing only 4M fbm per year to the largest one of 25MM fbm. However, most of the mills produced from 1.0MM to 4.0MM fbm per year. The table on Page 13 shows the location and approximate annual production of the 104 mills operating under the quota system during the 1965-66 winter season.

It is interesting to note that while only a small portion of the Whitecourt Forest lies within C.D. 15, almost 1/3 of the sawmills producing 1/4 of the output of C.D. 15 were located in that area. On the other hand, in the Footner Forest, 4.8% of the mills produced 11.3% of the output. This difference in the size of mill has resulted because of the different histories of development. For many years, logging operations have been carried on in the Whitecourt Forest, largely as a result of the close proximity to Edmonton. One result has been that a large number of small portable sawmills were used. Conversely, major developments in the Footner Forest began in 1963. The trend towards larger mills, the added expense involved in logging operations this far north and a favourable forestry policy resulted in much larger mills being constructed. The Footner area is fortunate in that very little in the way of adjustments of small holdings will be necessary. However, in the Whitecourt Forest the process of consolidating holdings, centralizing mills and phasing out bush operations will continue.

Timber which is cut from the forests in C.D. 15 is generally finished or semi-finished prior to being exported from the region. For this purpose, there were 24 major [1] planer mills located in the area in 1966. At these mills, the rough lumber from the sawmills is planed to produce smooth lumber which is then sent directly to lumber yards or lumber brokers or exported from the province.

Table 5 SAWMILLS OPERATING IN C.D. 15 [2]
1966

	Sawmills*		Approximate Annual Production	
	No.	%	MM fbm	%
Footner	5	4.8	29.0	11.3
Grande Prairie	13	12.5	53.6	21.0
Peace River	12	11.5	33.2	13.0
Slave Lake	35	33.6	64.9	25.4
Whitecourt	32	30.8	63.7	24.9
Edson	1	1.0	2.0	.9
Lac La Biche	6	5.8	9.0	3.5
TOTAL	104	100.0	255.4	100.0

* Includes only those sawmills within the boundaries of C.D. 15 and excludes ten custom sawmills.

The table on the following page groups these planer mills and their productive capacity by forest area and compares the latter value with the actual production of finished lumber from that forest. In 1966-67 this output was valued at about $10,250,000 at the mill level.

---

[1] over 1,000,000 fbm per year.

[2] (10)

Table 6

PLANER MILL PRODUCTION

C.D. 15 - 1966-67 (000 fbm) [1/]

Forest	No. of Mills	Approx. Planer Production	Total Lumber Production	Total Timber Production
Footner	2	23,000	27,600	28,100
Grande Prairie	5	57,900	55,000	79,400
Peace River	9	35,000	29,400	30,200
Slave Lake	5	35,400	59,000	81,400
Whitecourt	3	7,000	57,600	61,300
TOTAL	24	165,300	228,600	280,400

Five planer mills are located in the Grande Prairie area, five more ring Lesser Slave Lake from Kinuso to High Prairie, five more are scattered widely around Fox Creek, three are located in the Hines Creek-Fairview region and the remaining six are equally spaced along the McKenzie Highway from Grimshaw to High Level.

The table above illustrates that the lumbering operations do not adhere to forest boundaries. For example, most of the sawn lumber from the Whitecourt Forest is sent out of the census division to be planed and finished, mainly in the area around the town of Whitecourt. Large volumes of lumber move out of the Whitecourt and Slave Lake Forests to the east of the census division to Smith and Chisholm Mills. Similarly rough lumber is shipped from the Footner Forest to a planer mill in the Slave Forest.

The forest resources in C.D. 15 offer ample opportunity for increased

---

[1/] (10)

development for both timber and pulpwood enterprizes. Table 7 shows the inventory of forest resources for the total area; inventory by forest can be found in the appendix.

Table 7 TOTAL FOREST INVENTORY - C.D. 15 1/

SAWTIMBER VOLUME - MM fbm 10" + D.B.H.*

Spruce	Balsam Fir	Pine	Total Coniferous	Poplar
28,410	976	10,589	39,975	40,793

PULPWOOD VOLUME - M of Cords 4" - 9" D.B.H.

White Spruce	Black Spruce	Balsam Fir	Pine	Total Coniferous	Poplar
44,874	14,303	3,764	41,553	104,494	91,694

* Diameter Breast Height

The above table shows the tremendous potential of the area. There is approximately 40 billion fbm of coniferous timber and an equal amount of poplar timber available for lumber operations. In addition, huge quantities of pulpwood (4" - 9" D.B.H.) amounting to 104 million cords of coniferous and 92 million cords of poplar, are growing in the forests of the area. Much of this wood is inaccessible because of lack of roads or because it is located long distances from main transportation routes, which makes operations closer to these facilities more attractive. There will be, however, a growing need to expand into these less favourable areas as present timber areas become developed. This, in turn, means that large expenditures will have to be made either by the companies or by government to build access roads. However, at the present time, not too much interest

---

1/ (10)

is being shown in these areas since many operators in the northern area have not yet taken full advantage of their present quotas.

Using the inventory values, (See Table 7.) the Department of Lands and Forests has made estimates of the long-range allowable annual cut for the coniferous species only. These estimates are then followed up by a ground reconnaisance to evaluate the access, age and general condition of the stands. In turn, this information is used to determine quotas which the department offers for sale by public auction. Presently, most of the management units have had quota cuts established.

The quota system was implemented in 1966 with the aim of achieving the following goals:

1. Perpetual Yield of Timber - Based on the inventory estimates and ground sampling, the management units have had annual cuts established which will ensure a perpetual supply of timber. This quota cut is sold for a 20 year renewable term and assuming that no fires or insect attacks have occurred, the same annual cut will be available on a sustained yield basis.
2. More Economic and Stable Timber Operations - The system of allocating quotas by large blocks assists the trend towards larger centralized mills which are necessary for a healthy industry. At the same time speculation in timber holdings has decreased since large capital outlays are necessary at the time the quota is purchased. In addition, quotas must be developed fully within five years or penalties, in the form of reduced annual cuts or cancellation of quotas, are assessed.
3. Increased Emphasis on Conservation - One of the conditions of a quota operation is that reforestation must be undertaken in conjunction with the logging operations.

This program has provided more stability in the industry through reduced speculation and more importantly by providing a basis on which to undertake long range planning. Companies can now plan for at least 20 years operation and this, in turn, can justify the large capital expense in building fixed sawmill-planer mill complexes.

The values of annual cut represent only the potential cut of coniferous sawlogs and do not include any estimates for trees with diameters smaller than 10 inches. They do not include any estimates of poplar volumes of any size. Consequently, this does not take into account the volume available for pulpwood or other wood fibre operations. It does, however, provide an indication of the potential for expansion of the present type of operations since only very minor amounts of pulpwood are currently cut. In 1966-67, the cut of large diameter coniferous timber (10''+) for lumber and plywood amounted to approximately 267MM fbm.

By that year quotas totalling 323MM fbm had been sold so about 83% of the possible cut had been taken out. By the end of the 1967-68 season, additional quotas totalling 25MM fbm had been sold (mostly in the Slave Lake Forest) to bring the total quotas sold, as of July, 1968, to 360MM fbm. The potential annual cut amounts to approximately 400MM fbm so there is still about 40MM fbm available for future quota sales.

Table 8 SAWLOG TIMBER PRODUCTION POTENTIAL - C.D. 15

CONIFEROUS SPECIES ONLY

Forest	10" + D.B.H.* (MM fbm)** Allowable Annual Cut		Quotas Presently Assigned (1968)	
Grande Prairie		78.1		78.1
- N.C.F.I. Lease Area	46.4		46.4	
Slave Lake		115.4		99.5
- M.B.P.R. Reserve Area 1/	11.0		11.0	
Peace River		59.7		53.7
Footner Lake		120.0		97.7
Athabasca		-		-
Lac La Biche		5.4		5.4
Edson		-		-
Whitecourt		24.2		24.2
- M.B.P.R. Reserve Area 1/	24.2		24.2	
TOTAL		402.8		358.6

In addition to the coniferous timber, there was approximately 10.7MM fbm of poplar cut, almost all of which was used by plants in Edmonton to make plywood. No poplar quotas have been established to date because of lack of demand. However, the authority for deciduous quotas has recently been approved and some of the quota allowances have been determined for the Slave Lake Forest.

Noting that the inventory of poplar equals that of coniferous species (both in pulpwood and sawtimber stands) and that poplar matures in about 60 years compared with 80 to 120 years for spruce, it could be expected that allowable annual cuts for poplar would be at least as large as for the coniferous species. This latter potential cut amounts to about 400MM fbm so that at least 400MM fbm of large diameter poplar could be expected as a potential harvest. In addition, there is the 4" - 9" D.B.H. poplar for which no estimates have been made but it should be noted that the volume of these smaller diameter trees is approximately equal to the larger diameter poplar. While these enormous inventories of poplar are available, as yet, there is no demand for any poplar-composed products which would use even a small fraction of it. Until the demand for poplar-based products, such as certain kinds of pulp, chipboard, fibreboard, and plywood increases, only minor amounts of this resource will be used.

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* 10" plus "diameter breast height".

** 000,000 ft. board measure

1/ These quotas have been increased by 25% because Macmillan Bloedel had not started on their pulp mill development.

As might be expected, most of the potential sawtimber stands lie in the northerly part of the census division. The area north of a line drawn east and west through Manning would include most of this potential cut. At the present time, an allowable annual cut of lumber amounting to about 42MM fbm lies north of this line. This is over and above the volume from the quotas which are presently held and which amount to 150MM fbm. During the next few years, (assuming that: 1. market demand for lumber remains strong and it is likely to because of the strong demand for housing and 2. that access can be improved), it could be expected that quotas in the remaining management units will be sold.

In view of the interest in possible sites for pulp mills, one part of C.D. 15 has been designated as a "Pulpwood Exploration Permit Area". It consists of two blocks which jointly could support a very large pulpmill of over 500 tons per day. One block comprises much of the Grande Prairie

Forest while the other is made up of most of the Peace River Forest west of the McKenzie Highway (management units P1, P2, P6, P7 and P10). Ample quantities of both coniferous and poplar wood are available for a pulp mill with the south block providing wood for the initial phase and the north block being held in reserve for expansion. The table below shows the allowable annual cut by forest of pulpwood. These figures exclude any 10" + D.B.H. spruce and pine sawtimber which has already been sold for quotas. It does, however, include almost all of the spruce and pine 4" - 9" D.B.H. which is growing in the quota areas. In addition, most of the poplar stands from 4" + D.B.H. either in or out of the quota areas are included.

Table 9 ALLOWABLE ANNUAL CUT OF PULPWOOD
IN THE PULPWOOD EXPLORATION AREA OF C. D. 15

	Allowable Annual Cut in Cords (4" + D.B.H.)		
Forest Area	Coniferous Cordage	Poplar Cordage	Total Cordage
Grande Prairie	683,356	497,600	1,180,956
Peace River	338,979	332,900	671,879
TOTAL [1/]	1,022,335	830,500	1,852,835

Considering that the pulp mill would require between 350,000 to 400,000 cords per year, the area represents an excellent potential for one using coniferous and/or poplar trees. One company has received certain agreement rights for the two blocks and is proceeding with an intensive feasibility study with the hope of constructing a pulp mill in the early 1970's.

[1/] Stands of poplar on the N.C.F.I. Lease Area are not included. Neither are coniferous stands 4" - 9" D.B.H. in the same lease area.

At this point, it would be well to note that there are other areas in C. D. 15, which could provide sufficient annual cuts for other mills. However, given the present transportation, price, cost and demand variable, the above location is the only one considered economically feasible at this time.

Interest is also being shown in the area around Lesser Slave Lake for utilization of the poplar resources there in the production of plywood. At least one company is investigating the feasibility of constructing a plywood plant in that area.

Poplar trees have for many years been considered a nuisance by the lumber producers. However, during recent years, much research has been done on the possible utilization of this resource. In Alberta, a study has just been completed which analyzes the production and market possibilities of this wood. Presently, efforts are being made by the Department of Industry and Tourism to interest major companies in the results of this study. The plant outlined in this study would use about 45,000 cords of poplar annually. The Slave Lake Forest, alone, has enough poplar available for a total annual cut in the neighbourhood of 600,000 to 800,000 cords per year. The total census division would support a cut of around 2 to 3 million cords per year. The limitation to development of this resource is the problem of finding markets for the final products.

MINING

Most of C.D. 15 is covered by sedimentary deposits left behind by the retreating glaciers. The soil cover varies from a depth of a few hundred feet to several thousand feet. Beneath this surface deposit lies marine sandstone and shale. Large reserves of petroleum and natural gas are trapped in these marine layers and have made C.D. 15 one of the largest oil and gas storehouses in Alberta. As yet, few traces of metallic minerals have been found and it is rather unlikely that many will be found in this type of geological structure. The one major exception is the iron ore deposits found near Worsley. Non-metallic minerals such as coal, bentonite and silica are found in significant quantities.

Until the last half of the 1950's, petroleum production in C.D. 15 was relatively small (both in terms of absolute production and relative to Alberta). There were 3 major oil fields and 10 gas fields in production at that time. In 1956 C.D. 15 accounted for only 2% of Alberta's crude oil production, while in 1966 its share had increased to 30% and to 32% by 1967. By 1957, the Swan Hills, Sturgeon Lake and Kaybob oil fields had been discovered and these finds in turn stimulated increased drilling activity throughout the area. Drilling activity diminished gradually from the peak in 1957 to 1963 and then started to increase in 1964 and 1965 so that by 1965, 30 oil fields and 45 gas fields had been delineated. The number of wells drilled increased from 433 in 1961 to 853 in 1966. In 1966, the Rainbow and Zama Lake oil fields were discovered and exploration and drilling activity mushroomed.

The following table shows the production of crude oil in C.D. 15 during the past 12 years:

Table 10

CRUDE OIL PRODUCTION IN C.D. 15 [1]
(000 barrels)

1956	1957	1958	1959	1960	1961
2,476	3,348	4,207	7,218	11,873	18,230

1962	1963	1964	1965	1966	1967
21,494	25,253	32,394	45,636	59,453	77,310

As the above table illustrates, crude oil production increased by 3,200% from 1956 to 1967 and by 325% from 1961 to 1967. The value of this output in 1966 amounted to approximately $158 million [2] and to $200 million in 1967.

Recoverable crude oil reserves in C.D. 15 at the end of 1967, stood at 2.54 billion barrels, which was about 35% of the total Alberta reserves of conventional recoverable crude.[3] This was an increase of about 140 million barrels over the 1966 reserve figure which largely reflects the Rainbow Lake discovery. These values do not include the Zama Lake field since these are still confidential. This recoverable crude oil reserve estimate represents about 1/10 of the total crude oil in place. Secondary recovery methods, such as gas and water injection, are being used to increase the efficiency of recovery in many of the older oil fields. These methods can increase the recovery efficiency from the present 10% to between 30% and 70%. If secondary recovery methods were considered, then the present reserve estimates of 2.54 billion barrels in C.D. 15 could be increased. However, until these practices are actually undertaken in the fields, no accurate estimate of the additional recoverable reserves can be made.

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[1] (32)

[2] Value at Storage Tank

[3] Excludes Tar Sands Reserves.

Raw gas production increased by 2,040% from 1956 to 1967. However, since 1961, the raw gas production has only increased by 145%. Table 11 gives the raw gas production figures from 1956 to 1967:

Table 11 RAW GAS WITHDRAWALS [1/]
(000,000 cubic feet)*

1956	1957	1958	1959	1960	1961
4,128	12,833	38,281	32,296	40,109	36,163
1962	**1963**	**1964**	**1965**	**1966**	**1967**
50,098	63,328	62,872	69,925	78,018	88,251

* 1956-1960 - 14.14 PSIA and 60°F, 1961-67 - 14.65 PSIA and 60°F.

In the next four years gas withdrawals should rise rapidly as additional exports to the U.S.A. begin, with the completion of the gas plant at Marten Hills and the pipeline hook-up to the eastern U.S.A.

Up to 1955, ten gas fields had been discovered. With the increased drilling activity in the middle and late 1950's, a large number of new fields were uncovered. By 1967, 36 gas fields had been delineated. Raw gas reserves at the end of 1966 totalled 4,310 billion cubic feet (11% of the total Alberta gas reserves) and 5,246 billion cubic feet in 1967, or about 13% of the total Alberta recoverable reserves. To illustrate the magnitude of the reserves in C.D. 15, the reserves would be sufficient to satisfy the total needs of the city of Edmonton for 100 years,[2/] or to

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[1/] (32)

[2/] At 1966 consumption rate.

supply Grande Prairie's needs for 5,900 years.[1] However, of the total reserves of 5,246 billion cubic feet, about 526 billion cubic feet are presently labelled 'beyond economic reach' leaving some 4,720 billion cubic feet as the present economically recoverable reserves.

The following products are obtained from oil and gas production, usually at separation plants in the fields: condensates, pentanes plus, propane and butane. Table 12 shows the production of these from 1956 to 1967.

Table 12

NATURAL GAS LIQUID PRODUCTION
C.D. 15 [2]

(Barrels at 60°F)

Year	Condensate	Pentanes Plus	Propane	Butane
1956	935	-	-	-
1957	1,110	-	-	-
1958	581	-	-	-
1959	577	-	-	-
1960	824	-	-	-
1961	1,506	3,061	-	-
1962	36,407	52,350	-	-
1963	77,541	213,569	48,179	5,730
1964	2,252	288,589	96,114	66,558
1965	11,656	222,896	72,646	86,497
1966	12,568	349,229	95,406	94,633
1967	38,991	395,510	90,369	98,414

In 1966, this output was valued at $1.2 million.

There are four major natural gas processing plants located in C.D. 15 at the following points: Worsley, Boundary Lake South, Braeburn and Kaybob. In addition, there is a plant located at Judy Creek, which is outside the census division boundaries, but which utilizes gas from some of the fields within the census division. All of these plants became operational after 1960.

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[1] At 1966 consumption rate.

[2] (32)

Many of the fields can produce the condensates and natural gas liquids, what is required, is a plant to collect them. A plant for producing pentanes plus is planned for the Gold Creek field, where there is an estimated 11.8 million barrels of this product. Of the four existing plants, only the Kaybob plant has a published reserve figure. This amounts to a total of 61.1 million barrels of natural gas liquids broken down as follows: propane 11.1; butane 9.5; and pentane plus 40.5 million barrels. The other fields have no figures published because these reserves are relatively small. These plants have been constructed mainly to satisfy pipeline restrictions on the purity of the gas. That is, the plants are simply a sideline to the main function of gas production. However, should sufficient demand arise, other plants could be opened in some of the other fields. As of June 1968, an extraction plant to take sulphur from the 'sour' natural gas has been in operation in the Bigstone field where sulphur reserves are estimated at 2.3 million long tons. A plant at Fox Creek will commence operations in 1968 to utilize 3.4 million long tons of reserves. Three other fields - Gold Creek, Berland River and Simonette - have pools of 'sour' natural gas which would yield another 4.8 million long tons of sulphur.

In terms of total area product, the petroleum industry produces by far the largest share in C.D. 15. The table below shows both the total value of production and the substantial increases since 1961.

Total value of output increased two fold from 1961 to 1967. All products shared in this increased production with crude oil accounting for by far the largest portion. The two main restricting factors on increased crude oil output are market demand and pipeline capacity. The completion of the Rainbow Lake pipeline increased the pipeline capacity to about 100,000,000 barrels per year so that production could be further increased without pressing against pipeline capacity. As markets increase it is to be expected that output in C.D. 15 will maintain its share of crude oil production.

Table 13 VALUE OF OIL AND GAS PRODUCTION IN C.D. 15 [1/]

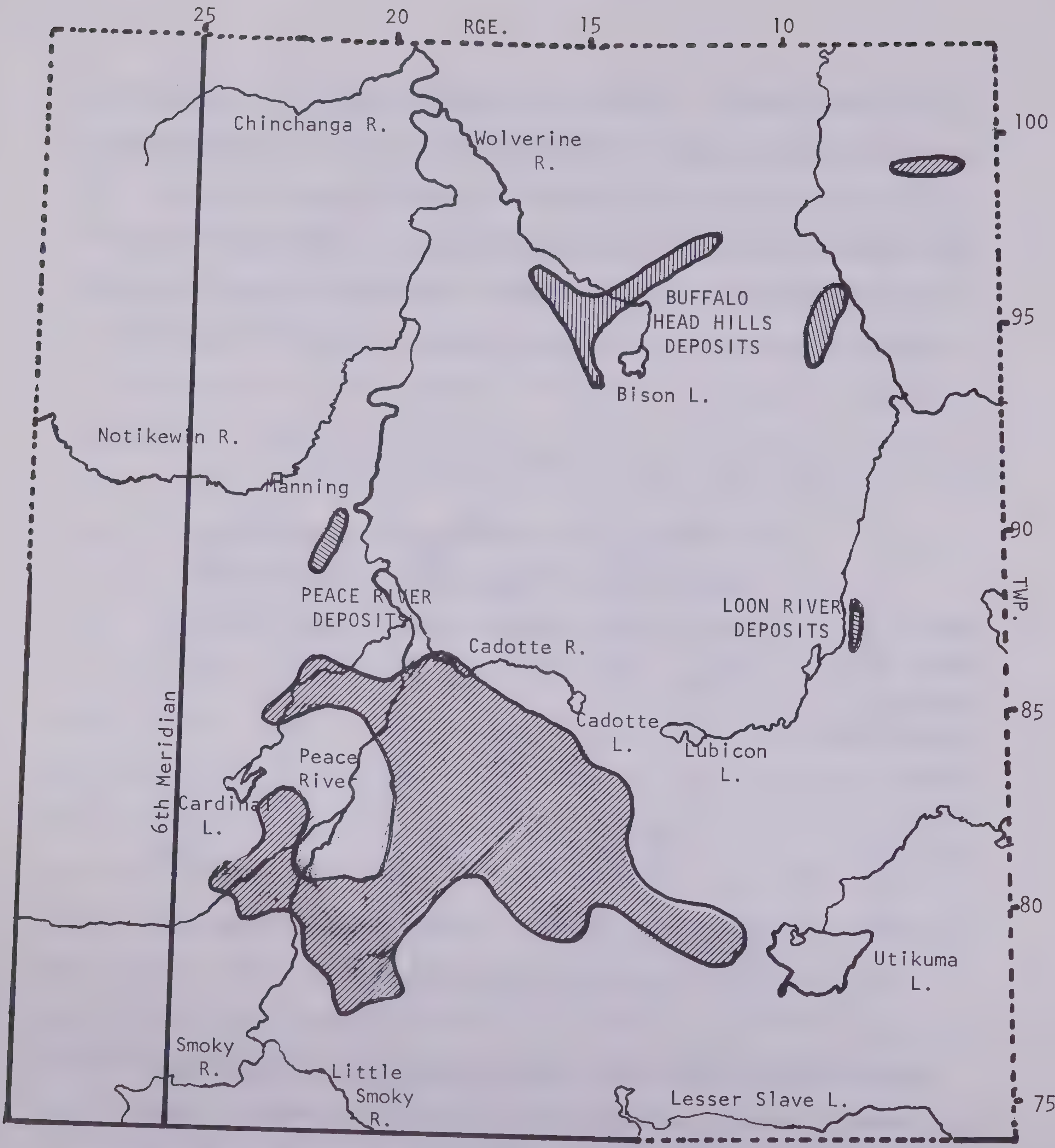
	1961		1966		1967	
	Output	Value ($000)	Output	Value ($000)	Output	Value ($000)
Crude Oil	18,230	43,387	59,483	157,631	77,310	204,871
Natural Gas	36,163	4,340	78,018	10,920	88,251	12,355
Condensate	2	4	13	32	39	101
Pentanes Plus	3	7	349	925	396	1,048
Propane	-	-	95	139	90	132
Butane	-	-	95	127	98	132
Total Value		47,738		169,774		218,639

Note: Units - Natural gas in millions of cubic feet; all others in thousands of barrels.

Prices - Based on weighted averages of fields.

One of the major resources in C.D. 15 is the oil sand deposits which are located in the area surrounding Peace River and northeast of Peace River. The map (Page 28) outlines the approximate boundaries of the deposits. The Peace River Deposit underlies an area of about 1,000,000 acres while the Buffalo Head Hills Deposit and the Loon River Deposits make up a total of 150,000 acres. A summary of the details of these deposits is presented on following pages:

Figure 2



OIL SANDS IN C. D. 15

Table 14 OIL SANDS DEPOSITS - C.D. 15

Name of Deposits	Maximum Thickness (ft.)	Overburden (ft.)	Reserves in Place (billions of bbls.)	Recoverable Reserves*
Peace River	300	1500-2300	50.4	20.1
Buffalo Head Hills	60-120	1100-2100	0.9	0.4
Loon River	60-120	700-1600	0.1	**

* upgraded synthetic crude oil

** negligible

Approximately 51.4 billion barrels of crude oil reserves are available from these oil sands. Of this an estimated 20.5 billion barrels could be recovered. This is approximately 9 times the total reserves of conventional crude presently located in C.D. 15.

During the early part of 1968, one oil company had been involved in an experimental scheme for recovering this oil in an area about 25 miles northeast of Peace River. However, this pilot plant is not active at the moment.

Development of these deposits is governed by conditions laid down under the oil sands development policy. In effect, this states that development of the sands depends upon:

1. finding 'new' markets for oil
2. finding markets beyond the reach of conventional crude oil
3. the trend in the life index of conventional crude.

In regard to the first point, a company which could guarantee to supply a market not presently served, could obtain a production quota from the sands equal to 50% of this increased market. The maximum total permitted under this clause to 1973 is 150,000 barrels per day. Applications for this amount have already been submitted by companies in the McMurray area.

Point 2 means that for any new markets which require the special characteristics of the oil sands oil, a quota can be established at the discretion of the Oil and Gas Conservation Board.

With regard to the last point, should the rate of conventional oil discoveries begin to decrease, then the possibility of additional oil sands production will be considered.

It would appear unlikely that any large developments in C.D. 15 will occur within the next five years.

The Smoky River coal deposits show the most promise for major development in the immediate future. These deposits are high grade coking coal and are second in quality only to the Appalachian coking coal of West Virginia which is the best in the world for coking use. This coal is used in blast furnaces for the manufacturing of steel. Demand for this type of coal is quite firm and the supply is relatively small. Japan is very interested in these deposits since that country is one of the major steel producers of the world. McIntyre-Porcupine Mines has started initial developments on what will likely be one of the most modern mines in the world. However, at the time of publication, contract talks with the Japanese steel companies were stalled and further development will not continue until a firm contract is signed. The Alberta Resources Railway was completed to the field by mid-summer of 1967 and will be ready for volume shipments within one year. The tentative contract called for an estimated purchase by the Japanese of two million tons by 1970 which could rise to five million by 1975 under a tentative agreement which would cover 15 years. Another company, once again linked with Japanese interests, has done extensive drilling, west of McIntyre's location at Grande Cache, to determine the economics of another mine in the area.

Table 15 COAL RESERVES IN C.D. 15 [1/]

	Reserves ('000,000 Tons)	B.T.U. Value/lb.
Slave	9	8,300
Sexsmith	10	8,300
Halcourt	300	10,900
Valhalla	30	9,700
High Prairie	9	8,300
TOTAL	358	

Reserves of the coking coal are conservatively estimated at 250 million tons and more generally run in the 500 million ton range. The former value refers to the coal which can be mined at present prices and with present technology. Given a change in either of these variables, the reserve figure would increase or decrease. In any case, there is sufficient coal there to support a mining industry for many years, assuming that technology does not make present methods of steel making non-competitive and/or obsolete.

In addition to coking coal, there are substantial reserves of ordinary

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[1/] (12)

coal in C.D. 15. There are five other coal fields in this region with reserves totalling 358 million tons.

Except for the Halcourt deposits, these fields are not suitable for thermal power generation because they cannot be strip mined economically. The Halcourt field which is presently too costly to strip mine may offer an opportunity in the future because of the large quantity and the relatively desirable quality.

Further development of these coal resources depends on an increased demand; perhaps from a new application such as in the manufacture of fertilizer or activated carbon filters.

Coal production in C.D. 15 has never developed to any extent. Production amounted to 354 tons in 1949, reached a peak of 1,140 tons in 1955 and diminished to nothing by 1964.

Bentonite, a form of clay, is found in a number of locations southwest of Grande Prairie. This mineral is used in bleaching agents, steel foundries, drilling mud, subterranean concrete walls and in the iron-ore pelletizing industry. No figures are available on the total reserves of this mineral in C.D. 15; however, it is known that they are of rather low quality.

A deposit of gypsum is located on the Alberta-British Columbia border at Fetherstonhaugh Creek, just above the boundary of Jasper National Park. In 1967, a testing program was carried out on this deposit and the results indicated a fairly low gypsum content at around 80% or less. With the problems of transportation, access and the low quality of the deposits, no immediate development is in sight. A spur line from the Resources Railway might result in future quarrying of this deposit, if construction is possible over this semi-mountainous terrain.

The salt basin which underlies much of Alberta, extends under the northeast and eastern section of C.D. 15. Depth of salt varies foom 0 to 500 feet thick, which is about 1/2 of the thickness of the deposits around Lindbergh in C.D. 12.

Sand and Gravel deposits are abundant throughout the area and are used mainly in local highway construction.

Aluminum sulphate deposits are found near Smoky River. However, few natural alum deposits are mined as the majority of alum salts are made chemically.

Pumicite deposits are found near the eastern end of Lesser Slave Lake and at Asplund, south of Valleyview. No reserve estimates are available. The major uses of pumicite are as an abrasive or a concrete aggregate as the amount of concrete required can be reduced by as much as 40%. It is used in minor amounts in acoustic and insulation products and as an absorbent. No detailed examination has been undertaken to determine the quality or quantity of these deposits.[1/]

Silica Sand deposits are found south of Peace River. Until 1960, extraction operations were carried out but production at Fort Saskatchewan was able to meet market demands and the operation was shut down.

Much of the area is covered with peat moss bogs. Demand for good quality peat is good, particularly from the south western United States. As yet, very little in the way of evaluation has been undertaken to determine the suitability of these peat bogs for commercial production. Certain organic and production characteristics must be present before any export demand can be generated and this involves detailed engineering studies on the bogs in question.

[1/] (30)

There is growing interest in the northeast corner of C.D. 15, where native sulphur deposits have been reported. As of January 1968, there had been 115 sulphur exploration permits taken out. Preliminary surveys by a number of companies have been undertaken and some samples have assayed at better than 70% sulphur. To date, no public estimates have been released as to the tonnage, grade or geological description of the deposits. World markets for sulphur are, at present, very firm and if the deposits prove to be extensive enough, a good possibility for development exists.

An Alberta company is investigating an occurrence of copper 90 miles northeast of Peace River.

In 1953, iron traces were found in oilwell drilling cores and prospecting began in 1954. By 1957, the Clear Hills iron deposits had been found. These deposits are low-grade sedimentary iron ore and because of a high silica and phosphorous content cannot be refined by conventional methods. Presently, proven reserves of 250 million tons of ore have been established by Peace River Mining and Smelting. Since about 30% of this is iron, there are approximately 75 million proven tons of iron in the area. This reserve figure is based on the area which has overburden to a depth of not more than 120 feet, which is considered the maximum depth for economic strip mining operations. The deposits extend westward, but the overburden increases and intensive surveys have not been undertaken. It has, however, been estimated from oilwell drill core records that the reserves of iron ore could total as much as 1 1/2 billion tons which would mean total iron reserves of almost 500 million tons. However, whether or not it would be economically feasible to develop any of the additional reserve is another question which depends to a large extent on market demand, market supply and technology.

At this time, one company has been attempting to perfect an acid-leaching process to separate the iron from the impurities in the ore. Results have been fairly favourable and a plant using this technique is being built in Ontario using scrap iron as the feedstock. If the operation proves successful, the plans are for a plant to be built in northwestern Alberta adjacent to the mining operations.[1/] The iron ore would be turned into iron powder and then into iron strips for use in the western Canadian market. Output would be confined to this market because of transportation costs. western Canadian demand for this product is presently about 30,000 to 40,000 tons annually and this is the market that the mining-refining operation would be out to obtain initially.

At this point, mention should be made of the possible effects of development of any sizeable iron output in western Canada. It could provide the basis for a surge of activity among secondary manufacturing industries which use steel as a basic input. The western Canadian population is increasing rapidly, per capita incomes are rising and therefore, market demand is increasing. Combine the demand features with the supply requirements and the elements for local industry are present. Once a stable demand for any of the related products is established, it may then be possible to develop an organization which can obtain export sales which would lead to larger output, improved efficiency and hence more competitive prices.

This is one of the optimistic possibilities among a large number of less favourable ones. It may be that even if and when this iron is produced it may only displace present sources of supply and have relatively little indirect effects on expanding other secondary industry.

1/ Present plans forsee a possible start on a plant in the late 1970's.

Small deposits of bog iron have been found in oil well drill cores at locations bordering the MacKenzie Highway from Manning northward. However, these are only a matter for curiosity at the moment since no significant deposits have been located.

COMMERCIAL FISHING

Commercial fishing produces relatively little of the total value of primary production in C.D. 15. In 1967 [1/] total revenue received by fishermen amounted to $285,600 which was about 14% below the 10 year average of $332,000. The fishing statistics for the past 10 years are set out below. In addition, the 1949-50 figures are presented for comparison.

Table 16

COMMERCIAL FISHING IN C.D. 15
BY WEIGHT AND VALUE
1949-50 AND 1958 TO 1967 [2/]

	Total Catch (000 lbs.)	Value to Fishermen ($)
1949	3,696	168,400
1958	5,413	355,400
1959	5,934	385,100
1960	7,859	519,100
1961	4,538	344,500
1962	4,829	309,400
1963	3,718	262,500
1964	5,834	305,400
1965	3,749	248,000
1966	4,661	303,600
1967	4,369	285,600

The total catch reached a maximum, in terms of both revenue and volume, in 1960 and since that time has decreased to about 60% of the peak year, after reaching a low in 1965.

[1/] (11) Refers to the fiscal year 1967 ending March 31, 1968.

[2/] Fiscal years e.g. 1949-50 ending March 31.

One of the striking points about these figures is the large fluctuations from year to year. Another point of note is the difference between the proportion by weight and the proportion by revenue. For example, from 1964 to 1965, the total weight caught fell by 36% while revenue fell by only 19%. From 1966 to 1967, the volume fell by 6.3% compared with a decrease in revenue of 6.0%. On the other hand, from 1963 to 1964, the volume caught increased by 52% while the revenue rose by only 16%. The reason for this relationship between volume and revenue can be explained by an examination of the following table:

Table 17

COMMERCIAL FISHING IN C.D. 15
1949-50 AND 1958 TO 1967 [1/]

Year	Tullibee	Whitefish	Pike	Pickerel	Perch	Other	Total
1949	2,745	641	64	76	2	168	3,696
1958	3,857	1,211	170	61	8	105	5,413
1959	3,863	1,370	129	442	105	24	5,934
1960	4,799	2,036	167	749	77	32	7,859
1961	1,964	1,569	336	559	75	34	4,538
1962	2,817	862	888	139	34	89	4,829
1963	2,033	708	818	114	11	34	3,718
1964	5,210	321	274	15	9	4	5,834
1965	2,731	522	440	13	10	31	3,749
1966	3,332	432	721	23	92	61	4,661
1967	2,824	548	507	23	76	391	4,369

[1/] (11) Fiscal year ending March 31, 1968.

In Table 17, the fluctuations in total catch were evident. Table 17 shows that yearly variations in species catches were, in general, more severe than for the total catch. These changes in species catches are responsible for the non-proportional relationship between revenue and volume. The change from 1963 to 1964 provides one of the best illustrations. As previously noted, volume increased by 52% and revenue by 16%. All of the volume increase resulted from a more than doubling of the tullibee catch since all of the other species catches fell to less than half of their 1963 levels. However, tullibee sold for about 1/4 of the price per pound of whitefish. Therefore, one pound of whitefish was worth the same as four pounds of tullibee. The former catch dropped by almost 390,000 lbs. which required an increase of about 1,560,000 lbs. of tullibee to maintain the same level of revenue. This difference in price per pound and the fluctuating species catch is the basis for the non-proportional relationships between revenue and total weight caught.

One of the most serious problems is the drop in the whitefish catch which decreased from a high of 2 million pounds in 1960 to a low of .3 million lbs. in 1964 to the present catch of .6 million lbs. Most of this loss is due to the closure of the whitefish fishery in Lesser Slave Lake which was brought about by a rapidly disappearing whitefish population.

The price of whitefish over the 10 year period has been inversely related to the volume caught. That is, large catches have been associated with declining prices. For example, from 1959 to 1960 the price fell from 13.3¢ to 11.9¢/lb. on a volume increase of from 1.4 to 2.0 million pounds. To some extent, this association is by chance since the price is determined by the supply of whitefish from the prairie provinces, N.W.T. and northern

Ontario, to the eastern U.S.A. As it happened, the supply of Alberta whitefish moved in the same direction as the total regional production.

On the other hand, the tullibee price appears to be relatively independent of the supply. Neither relatively large nor small catches appear to significantly affect the price. The reason for this is that tullibee is used entirely for mink food. A large catch means that imported mink food from B.C. will be cut back. A small catch results in higher imports from B.C. with little change in the local price. Price increases have a ceiling based on the laid down price of B.C. fish to the mink ranchers.

In the case of pike, perch and pickerel, the supply from this area has a very minor, if any, effect on price. The main market for these species is once again the eastern U.S.A., although in many instances the pike and perch are used for animal feed by Alberta mink ranchers. Again, price is determined by the total supply from the prairie provinces, N.W.T. and northern Ontario. C.D. 15 makes up such a small portion of the total that it influences the price very little.

While the industry does not produce a major portion of the regional output, it does provide valuable seasonal employment for many. This is particularly true for residents of the south-eastern area around Lesser Slave Lake, where over 90% of the catch is taken. Many people combine logging and lumbering in the winter with fishing in the summer. Mink ranchers often fish during the summer and some during the winter as well. In the 1965 fiscal year, there were an estimated 335 fishermen in C.D. 15. The gross value of catch amounted to $248,000 and this provided an average gross of $745 to each fisherman, which emphasizes the part-time nature of the work.

During the past few years, the number of people involved in commercial fishing has gradually decreased. Rising costs, smaller catches, and other more attractive occupations have contributed to this decline. As well as those engaged directly, other jobs in the processing industry have disappeared as all of the fish plants in the area have closed down. It is to be expected that the number will continue to decline because of the above reasons plus the increasing incidence of infestation in the whitefish.

A mention should be made of the importance of the commercial fisheries to mink ranching. These mink farms were set up in the Lesser Slave area because of the cheap source of food, tullibee. While the tullibee fishery, in itself, does not provide a great deal of revenue, it supports this million dollar industry in the area. If for some reason tullibee fishing stopped, the ramifications would be much more significant than simply the loss of fishing revenue to the fishermen.

To sum up, tullibee, whitefish and pike account for over 90% of the total weight caught in C.D. 15, and most of this is taken from lakes within a 60 mile radius of Lesser Slave Lake. Total income to the fishermen has been decreasing largely as a result of the smaller whitefish catches. However, since the number of fishermen has declined, the average income has not been decreasing at as fast a rate as has total receipts.

By the summer of 1969, a fish marketing board should be in operation. This will be responsible for marketing of freshwater fish taken from the prairie provinces, N.W.T. and northern Ontario. The intention is to establish some bargaining power for the suppliers and to provide better information on demand conditions. By balancing supply with demand, daily price fluctuations should be retarded and fishermen should receive a more stable return for their efforts.

FUR TRAPPING [1]

In the late 1700's and 1800's, the fur trade was the only industry in this region. Most of the settlements depended on the fur trade for their existence, operating supply depots and trading posts. As this industry expanded, farming began because of the need to supply the settlements with locally grown food and thereby increase the amount of trading goods brought in. Later, many of the settlers followed the old fur trade routes to reach this region. Initially then, the fur trade brought the first white people into this area and this subsequently set the stage for future agricultural development.

From this predominant position, the fur trade has declined (both absolutely and relatively) to its present position and it now contributes a relatively small amount to the production total of the area.

A study has been completed which provides a look at the wild fur industry in the recent past.[2] During the 1964 trapping season, an estimated $600,000 in wild fur was caught and marketed in C.D. 15. The table on the following page shows the major types of fur caught and their importance in terms of pelt numbers and value.

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[1] Excludes mink ranching, which is covered in Agriculture in Alberta's Census Division 15, Rural Development Branch, Economics Division, Alberta Department of Agriculture.

[2] M. Dwyer, unpublished data.

PERCENTAGE OF FUR PELTS CAUGHT IN C.D. 15 BY VOLUME AND VALUE [1]

Table 18

1964-65

	Percent of Pelts	Percent of Value	Average Price/Pelt [2]
Beaver	2.8	32.9	$11.14
Ermine	3.2	3.4	1.15
Mink	0.4	5.3	15.42
Muskrat	9.3	11.4	0.93
Squirrel	84.3	47.0	0.48

In terms of total revenue, beaver and squirrel are the most important animals trapped. In the case of squirrel pelts, they comprise 84% of the total pelts caught, but result in only 47% of the total revenue. On the other hand, beaver pelts make up less than 3% of the total number of pelts, but provide 33% of the revenue to the trappers.

While trapping does not provide a particularly substantial flow of income, it does affect a fairly large number of people. During the 1961 trapping season, approximately 1,260 people took out trapping licenses. By 1966, the number had increased to 1,360. These figures do not always reflect actual involvement in trapping, since some licenses are never used. For example, in 1964, there were 950 active licenses out of an estimated total of 1,000 licenses issued. An active license is one which shows that fur has been sold by the holder of the license. There were also more trappers than trapping areas. This arises because more than one Indian is allowed to trap in the same trapping area.

Based on the 1964 figures, the average catch per active license amounted to $630.00. Considering that there were an average of about 1.3 trappers

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1/ Includes only the 5 major types listed below. They account for at least 90% of the total catch.

2/ Ten-year average.

per trapping area, then it can be roughly estimated that the average income per trapper amounted to about $480.000 [1/], for the 1964 season. With a trapping season of between four and five months, this represents an average monthly wage of between $95 and $120 per month per trapper. Of course, many of the trappers worked only for a few weeks and therefore, the average monthly earnings for the remainder would rise proportionately. But, the figures represent the low returns to most of the trappers in the area from this occupation.

One point to note is the number of Indians who trap in C.D. 15. While no figures are available for earlier years, in 1966-67, 394 Indians were reported as trappers and they received an average of $240.00 each for their pelts. If the assumption is made that this group earned about the same during 1964, then the average income per active license of all other trappers would be raised to somewhere around $670.

Compounding this problem of low returns to trappers, is the fact that provincial figures from the 1964 season to the present show that the total value of wild fur pelts has varied widely. In 1964-65, the total value of pelts amounted to approximately $1.75 million, but this had fallen to $1.04 million in 1966-67 and increased again to $1.75 million in 1967-68. C.D. 15's portion of this revenue cannot be separated, but observing that during the 1964 season 54% of the value of furs came from there, it is to be expected that total income has varied in a similar fashion to the Alberta total. Throughout the period, from 1964 to 1967, the number of trappers remained fairly constant so that average earnings likely fluctuated significantly during this time.

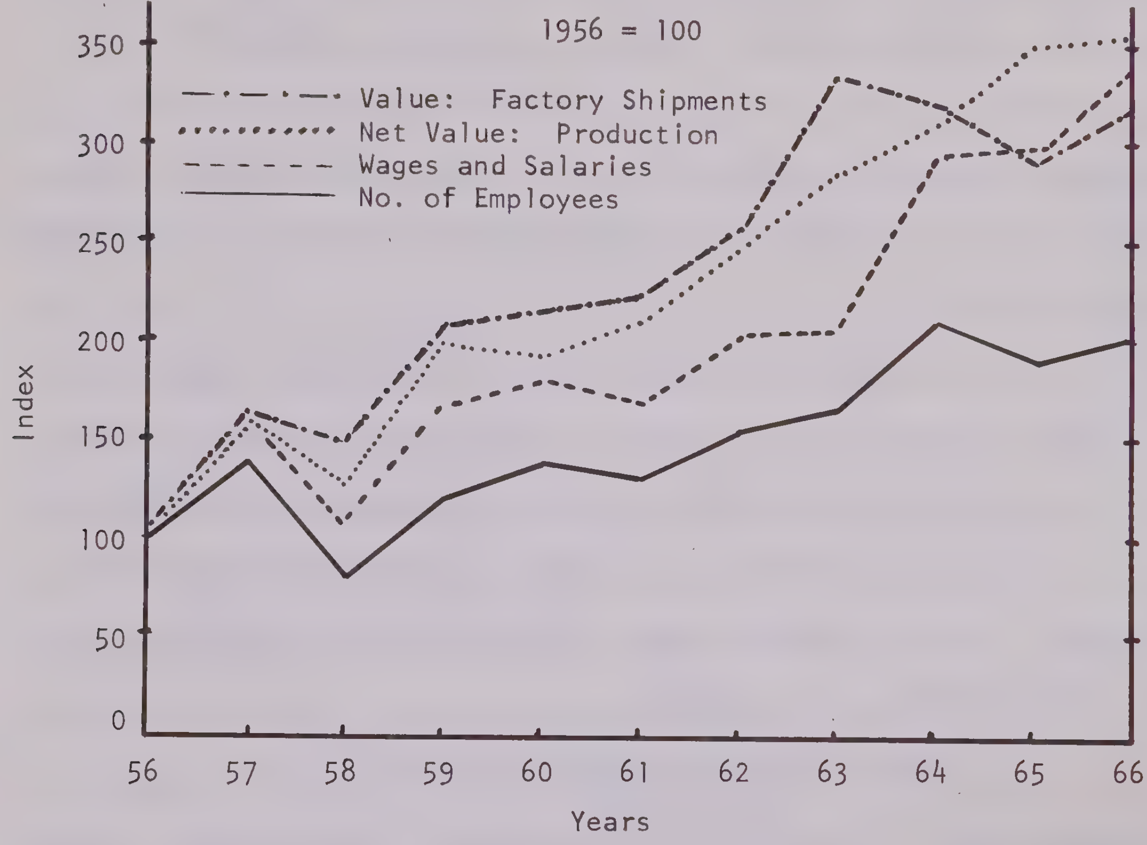
[1/] Includes only active trappers. Excludes those who held licenses but did not trap.

MANUFACTURING

Manufacturing activity increased substantially from 1956 to 1966, in terms of rising employment, wages and salaries, net value of production and total value of shipments. The following graph illustrates the trends over the period.

Figure 3 MANUFACTURING* INDICES - C.D. 15 [1]

1956 = 100



* Excludes sawmills, and sash, door and planing mills.

The value of factory shipments, net value of production and, total wages and salaries paid more than tripled from 1956 to 1966. At the same time, the number of people employed doubled. One result of this was an increase in the average wage and salary from $2,515 in 1956 to $3,279 in 1961 to $4,379 in 1966.

The value of factory shipments is arrived at by summing the gross receipts from sales of manufactured articles at the factory level for all the establishments. It would not, for example, include transportation costs, nor marketing expenditures made by firms which purchase the manufactured articles for resale. A large number of the manufacturing establishments in the area serve only the local market, (e.g. bakeries, feedmill) so that the value of shipments is synonymous with the price paid by consumers. On the other hand, a number of other firms (e.g. veneer and plywood mill) export their products to other areas in or out of Census Division 15. In these instances, costs of transportation, distribution and marketing would be over and above the value of factory shipments and therefore, not included in the value figures.

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[1] Table G, Appendix. Seven pasteurizing plants are not included in the values from 1956 to 1959. Their total sales amounted to approximately $300,000 annually.

The net value of production is essentially the difference between the value of factory shipments and the cost of the raw materials fuel and power. As such, it approaches a 'value added' concept and measures the increase in value resulting from the combination of inputs in a manufacturing process.

The actual value of factory shipments and net value of production for the years 1956 to 1966 are shown below:

Table 19 MANUFACTURING PRODUCTION IN C.D. 15 [1/]

1956 - 1964

	1956	1957	1958	1959	1960	1961
Value of Shipments ($000)	3,038	4,952	4,515	6,289	6,508	7,216
Net Value of Production ($000)	1,310	2,100	1,677	2,589	2,517	2,962

	1962	1963	1964	1965	1966
Value of Shipments ($000)	7,768	10,182	9,753	8,868	9,630
Net Value of Production ($000)	3,225	3,730	4,046	4,588	4,652

[1/] (2)

From the above table, it is evident that manufacturing is a fairly significant industry in the area with sales at the factory level approaching $10 million. The physical output of this industry has grown rapidly in the past decade, even when an allowance for inflation is made. From 1956 to 1966, the manufacturing price index, for the major commodities produced in the area, rose by about 20% so that even if physical output had remained constant, the total value of shipments would have risen by this figure. However, the actual increase in value tripled so that physical production increased by at least 2 1/2 times the 1956 figure. This appears to be substantially correct since employment in the same period more than doubled and employment increases are usually highly correlated with output increases.

The food and beverage group of firms plays an important role in the regional economy, accounting for about 30% of the manufacturing output. Prior to 1956, the food and beverage group accounted for over 50% of the manufacturing value. However, since then, manufacturing operations have diversified and this group has become relatively less important. The forest-based firms are the other major contributors to employment and production, accounting for approximately 2/5 of the total value of output, mainly because of the large veneer and plywood mill in Grande Prairie. 1/

The following table shows the type of establishments which were located in C. D. 15 in three selected years.

1/ One should bear in mind that planing mills are excluded from the above, so that forest based firms are even more important than the above values indicate.

Table 20

MANUFACTURING ESTABLISHMENTS BY TYPE IN C.D. 15

	1956	1961	1966
Food and Beverage Group			
Bakeries	4	6	7
Butter and Cheese Plants	2	2	2
Pasteurizing Plants *	7	3	5
Soft Drink Plants	3	3	3
Feed Mill	1	1	1
Wood Group **			
Veneer and Plywood Mill	1	1	1
Wooden Box Factory	-	-	1
Wood Preservation Plant	-	-	1
Sash and Door mill	-	-	1
Household Furniture	3	1	4
Other Manufacturing			
Metal Stamping	1	1	-
Machine Shop	3	3	3
Concrete Products	2	3	6
Misc. Machinery and Equipment	-	1	-
Dental Laboratory	-	-	1
Signs and Displays	-	-	1
Printing and Publishing	4	3	6
Petroleum Refining	-	1	-
TOTAL	31	29	43

C. D. 15 offers an opportunity for development of any of the three major classes of manufacturing firms - resource based, market based or footloose. The most promising outlook, however, is for more resource based firms. As mentioned elsewhere in this report, very serious consideration is being given to the construction of a pulp mill south of Grande Prairie. In addition, a plywood mill around Lesser Slave Lake may be a possibility. Looking into the future, the iron ore deposits around Hines Creek provide an opportunity for some type of ore concentrator if an economically feasible process is developed. The area has a plentiful supply of gas, oil, wood, sulphur, coal, fish, land, water and power available for other future development.

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* None of these firms were included in the principal manufacturing statistics totals until 1960.

** It should be kept in mind that sawmills and planing mills are excluded from these figures, so the forest-based firms take on even more importance than these figures indicate.

Market-based firms, (i.e. those which produce items designed to satisfy the requirements of local demand) have a good opportunity for expansion. The population in the area is growing rapidly, particularly because of the oil exploration activities, and this makes an expansion of local production necessary. For example, from 1956 to 1966, the number of bakeries increased from 4 to 7; concrete producers from 2 to 6; and printing and publishing firms from 4 to 6. Production from these types of firms, which satisfy local demands, can be expected to increase along with the general population growth. The trend towards more densely populated areas will add impetus to the above mentioned expansion, as well.

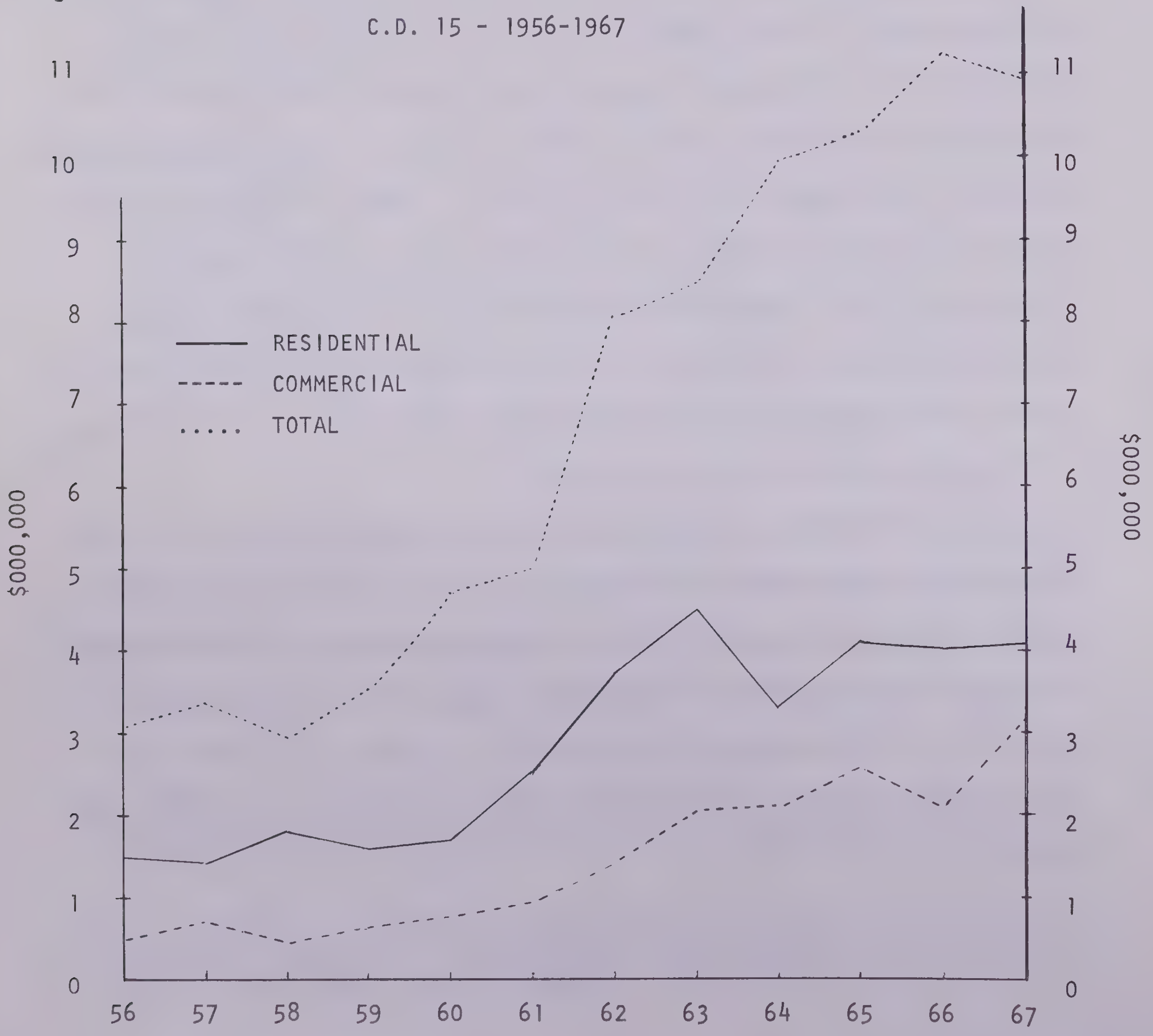
The establishment of 'footloose' firms is another possibility. These firms produce items which can be exported to points outside the region, without transportation costs adding a large percentage to the per unit cost Their major input would be skilled labour. (e.g. a firm which produces jewellry) The labour supply should present no problem since many of the young people currently leave the area because of a lack of employment opportunity.

CONSTRUCTION

No comprehensive figures are available on the total amount of construction in C.D. 15. There are, however, certain figures which point out the trends in this industry. Values of building permits and highway construction are two such trend indicators.

Figure 4 shows the growth in total value of building permits as well as for residential and commercial construction in selected centres in C.D. 15 from 1956 to 1967.

Figure 4 VALUE OF BUILDING PERMITS ISSUED [1/]
C.D. 15 - 1956-1967



[1/] (1)

The total value of building permits more than tripled during the period, rising from $3,000,000 to $11,000,000 after reaching a peak of $11,300,000 in 1966. From 1958 on, construction activity increased at an average compound rate of 20% per year. Much of this can likely be attributed to the increased oil exploration at this time, which brought a number of new people into the area, plus the expansion in the forest industry. This meant new homes, commercial facilities and warehouses in the communities. The figures do not include any values for construction projects located outside of cities, towns or villages, so they under-estimate total activity. However, they do illustrate the trends in this sector of the economy.

From 1956 to 1967, commercial construction quadrupled and residential construction increased by 2 1/2 times. It is important to note this because these two values are good indicators of the economic growth of an area. Since commercial building permits are issued for such things as retail stores, barber shops and beauty shops, then increased construction in this sector means that consumers have enough income to support additional service trade establishments. This income is generated by the wealth producing industries in the area (e.g. drilling, manufacturing, agriculture) so that increased commercial activity implies increased output in the area economy. Another point worth mentioning is that, in general, decisions to construct these establishments are based on the buoyancy of the local economy and expectations of future growth.

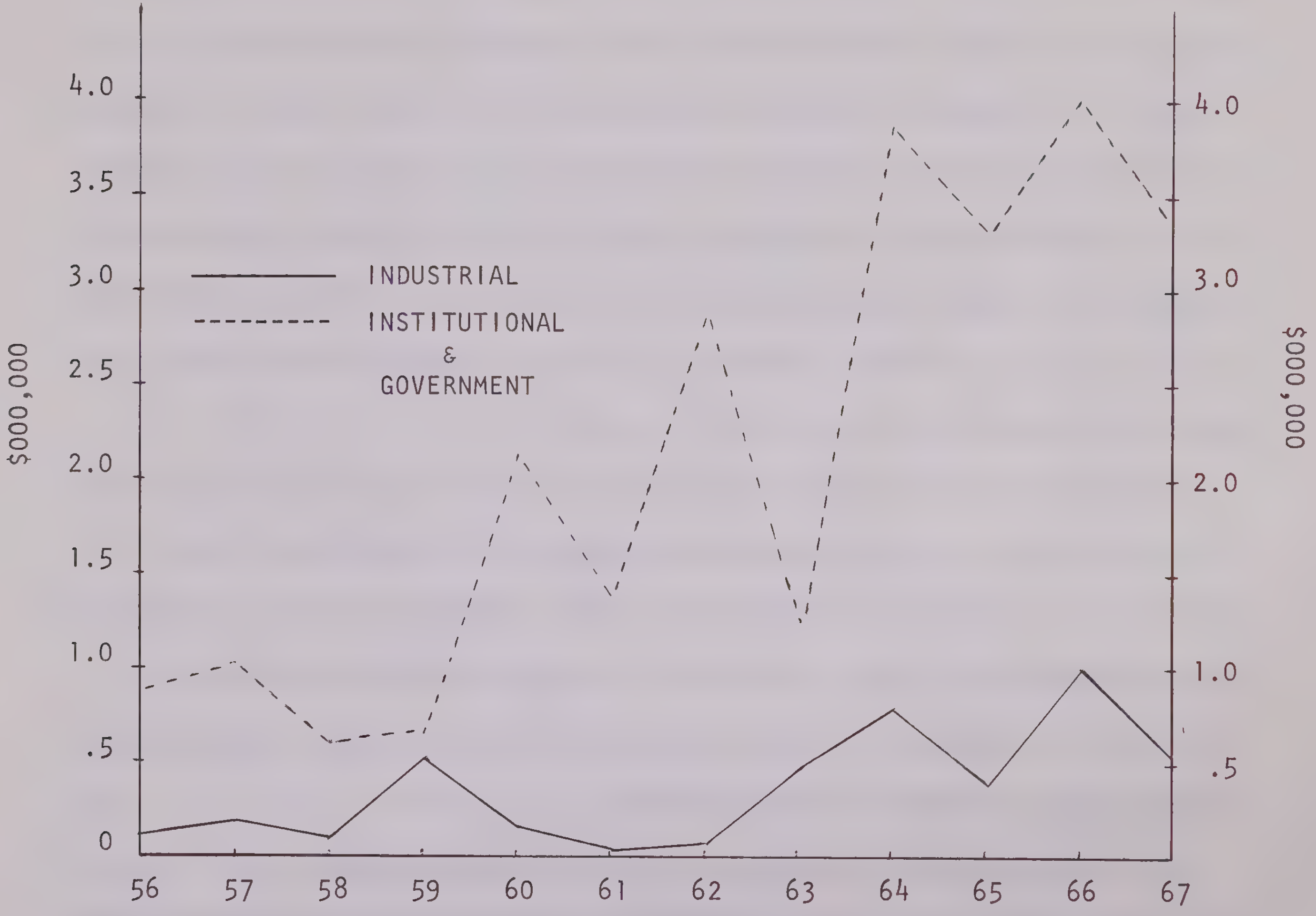
Residential construction reflects such things as future expectations regarding job security and community growth, disposable income and credit conditions. It appears that the people from the selected centres hold a favourable view of the growth outlook since the increase was quite substantial.

It should be emphasized that the figures apply only to the selected centres and not to the rural farm and non-farm areas in C.D. 15. The outlook in these other areas may be somewhat different but no records are available.

One of the most encouraging trends is the residential construction activity in the towns of Fairview, High Prairie, and Peace River. In all three centres the value of residential permits has exhibited a rising trend over the period. (except for 1964 in Peace River) Grande Prairie, (the only city in the area) as may be expected, has also shown increasing expenditure on residential construction, except for 1964.

Industrial construction fluctuated significantly during the period 1956-1967. This is as might be expected from a largely agricultural area. The industrial base is small enough that the erection of any sizeable plant shows up as a very large increase in value over the 1956 figure.

Figure 5 VALUE OF BUILDING PERMITS ISSUED [1]
C.D. 15 - 1956-1967



These industrial figures are for the selected centres only so that any new plant constructed outside of the town or city limits would not be included in the total. A number of the larger enterprises, such as planing mills are located outside of the town or city limits and are not included in the figures.

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[1] (1)

The last category, institutional and government building permits, has shown a gradually rising trend from 1959 to the present. However, this segment has exhibited the greatest yearly variations of all.

Up to 1966, most of the above noted indicators showed a gradually rising trend. However, in 1967 the situation changed somewhat. Residential and commercial expenditures remained almost constant while industrial, institutional and government expenditures decreased. The total value of permits issued dropped from the 1966 high of $11.3 million to 11.0 million. Industrial, institutional and government values, which had jumped significantly in 1966, were largely responsible for the sharp decline. This decline was, in part, due to the general shortage of mortgage money throughout most of 1967 in most regions of Canada.

At the present time, a housing shortage exists in many of the centres in the census division, particularly in Grande Prairie and Peace River. Housing construction has not been able to keep pace with the heavy inflow of people employed on the many construction projects and the expanding activity in the oil industry. There is, in particular, a shortage of apartments and motels for the transient labour force.

The Middle East oil situation is expected to add impetus to oil exploration and drilling activities as additional markets may become available for Alberta oil. In September 1967, a delegation from the U.K. arrived to discuss the possibility of purchasing Alberta crude oil. Similarly, Japan is studying the possibility of a more stable supply.[1/] If additional markets are found, additional pipelines would have to be constructed, since the export supply of Alberta oil is presently limited by the capacity of the

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[1/] Alberta's advantage is in the stable supply since Middle East crude oil delivered to Japan is about the same price as the wellhead price in Alberta.

present pipelines. Since C.D. 15 has at present 35% of Alberta's recoverable crude oil reserves (and likely more once the Rainbow and Zama fields are fully explored) it is to be expected that much of the increased supply would come from the area. This being the case, it is likely that the oil industry will help maintain construction activity at its present level.

Other developments in the 'boom' economy, such as the Alberta Resources Railway, the Smoky River coal deposits, and perhaps, the Clear Hills iron ore deposits, will also require significant construction expenditure, both now and in the future. This will provide substantial income payments to many of the people in the area both through direct payroll income and income generated through this cash flow.

In terms of effects on the economy, construction projects such as roads and pipelines provide a significant impact on income in the region. Table 21 shows the expenditures on construction and maintenance of roads and bridges in C.D. 15 from 1955 to 1966. (See Table 21, Page 56.)

Total expenditures rose sharply from 1955 to 1959, then decreased steadily to 1964 and recovered again in 1965 and 1966. In the table on Page 56 there is a category listed as 'Expenditures under the Roads to Resources Program'. This was a Federal-Provincial shared cost agreement which resulted in the improvement of the McKenzie Highway, north of Grimshaw and Highway 58, east of High Level. The program provided for an expenditure of $15 million and lasted from 1958 to 1966 with most of the work undertaken between 1958 to 1963. This program provided employment for many people in the area, particularly from 1958 to 1963.

If the Roads to Resources expenditures were excluded from the total values the same general trend shows up. That is, expenditures in areas other

Table 21

EXPENDITURES* ON CONSTRUCTION AND MAINTENANCE OF ROADS AND BRIDGES

C.D. 15 - 1956-1966 1/

$000

	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67
Total Expenditures	7,597	9,181	9,353	13,137	14,349	14,383	10,303	9,618	9,513	9,405	11,481	15,547
Expenditure on "Roads to Resources" Program	Nil	Nil	Nil	1,224	3,370	2,785	3,173	1,359	2,034	553	480	Nil
Expenditure Net of "R to R" Program	7,597	9,181	9,353	11,913	10,979	11,598	7,130	8,259	7,479	8,852	11,001	15,547

* Undertaken by the Department of Highways and including grants made by the Department of Highways to improvement districts, municipal districts and county subdivisions for the purpose of road and bridge construction and maintenance.

Table 21(a)

CONSTRUCTION AND MAINTENANCE EXPENDITURE - ROADS & BRIDGES IN C. D. 15

1956-1966 2/

$000

	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67
Construction Expenditures on Roads and Bridges (Incl.Roads to Resources)	5,091	6,736	6,533	9,636	10,589	9,900	5,920	5,328	5,016	4,593	6,568	9,247
Maintenance Expenditures on Roads and Bridges (Incl. Roads to Resources)	2,506	2,445	2,819	3,500	3,759	4,483	4,384	4,289	4,496	4,811	4,913	6,300
Total Const. & Main. Exp.	7,597	9,181	9,352	13,136	14,349	14,383	10,303	9,618	9,513	9,405	11,481	15,547

1/ (6 & 7)

2/ ibid.

than the more northerly ones, tapered off somewhat from the peak in 1958 through 1960 and fell to a low in 1963. However, by 1964, expenditures had once again started to rise. In 1965 and 1966, expenditures under the Northern Development program were largely responsible for the increase in construction.

Table 21a outlines these fluctuations in expenditures during the period. (See Page 56.)

Construction expenditures have been the cause of the large fluctuations in total spending. One of the reasons for this has been the large variations in expenditures on bridge construction.

Maintenance expenditures, on the other hand, have exhibited a steadily rising trend throughout most of the period. This is of note because it emphasizes the continuing nature and relative stability of this type of expenditure. People in the area have grown to depend on this spending for annual employment.

There are 11 maintenance yards located in the area. In some of the smaller locations, these operations are considered one of the main industries since they provide a source of full-time employment for a few people and seasonal and part-time work for many others in the surrounding area.

A major construction project is the Alberta Resources Railway. This 235 mile line from Solomon to Grande Prairie will cost an estimated $100 million from its beginning in December of 1965 to its completion in the winter of 1968.

The McIntyre-Porcupine Mine in the Smoky Lake Coal Fields will cost an expected $40-$50 million if and when the contracts are signed.1/ In this instance, however, much of this expenditure will be made for imported equip-

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1/ In October, 1968, the contracts were reported to have been signed.

ment so that a relatively small portion of the total construction costs would accrue to people of the area. Construction may decrease beginning in September, 1968 since the Winter Works Program which provided from $1.5 million to $2.6 million annually from 1960 to 1966, has been discontinued.

TRANSPORTATION

Transportation, while often not recognized as of major importance to regional development, plays a leading role in economic growth: Costs of transportation always play an important part in any decision to construct new factories. In many cases the choice among possible sites for factories using the same raw materials is one of minimizing costs of transportation. This puts northern Alberta at an immediate disadvantage for most industries in that it is so distant from major markets. For this reason it is imperative that a very efficient transportation system be developed.

Access in and to C.D. 15 has gradually improved over the last 60 years. The railway was built along the shore of Lesser Slave Lake to High Prairie by 1914; to Rycroft by 1916; and through Grande Prairie to the B.C. border and beyond by 1929. Another extension was laid to Peace River and Grimshaw by 1921 and subsequently as far west as Hines Creek. From 1961 to 1965, the Great Slave Lake Railway from Roma junction, (7 miles west of Peace River) to Pine Point, N.W.T., was built, providing a route for ore from the Pine Point mines to southern B.C. As well, agriculture and forestry have received many benefits from this line. In the more recent past, the Alberta Resources Railway from Solomon to Grande Prairie is in the final phase of construction and will be completed by early 1969. The map on Page 61 shows the location of the railway lines. These routes are a prerequisite for any future large scale resource developments.

The first roads into the area were wagon trails established during the Klondyke Gold rush. Since that time, the area has developed an adequate system of highways and local roads. The total approximate miles of constructed roads are as follows:

Table 22 ROAD INVENTORY SUMMARY - C.D. 15

Type of Road	Miles
Provincial Highways	4210
District Road	5575
Private Road	619
Forestry Road	621
TOTAL	11,025

The provincial highways are either paved or well gravelled and are excellent all weather roads. On the other hand, while many miles of district roads are adequate for all weather driving, around 35 to 40% of the miles of roads are relatively impassable in wet weather. The main forestry roads can be travelled throughout most of the year, except when prolonged wet weather sets in. Of course there are many miles of forestry roads which are not listed that can only be travelled during the winter months when the muskeg is frozen. The map on Page 62 gives an indication of the road network which provides more or less all weather accessibility. Of the first four areas above, over 80% of the rural farm population is located within 3 miles of a primary highway or secondary road. In M.D. 136, slightly over 70% of the rural farm population lies within this limit.

The same map shows the bus routes which serve the northern Alberta communities.

The more settled areas (County #1, M.D.'s 130, 133, 135 and 136) have about 35% of the estimated road mileages in C. D. 15.

Figure 6

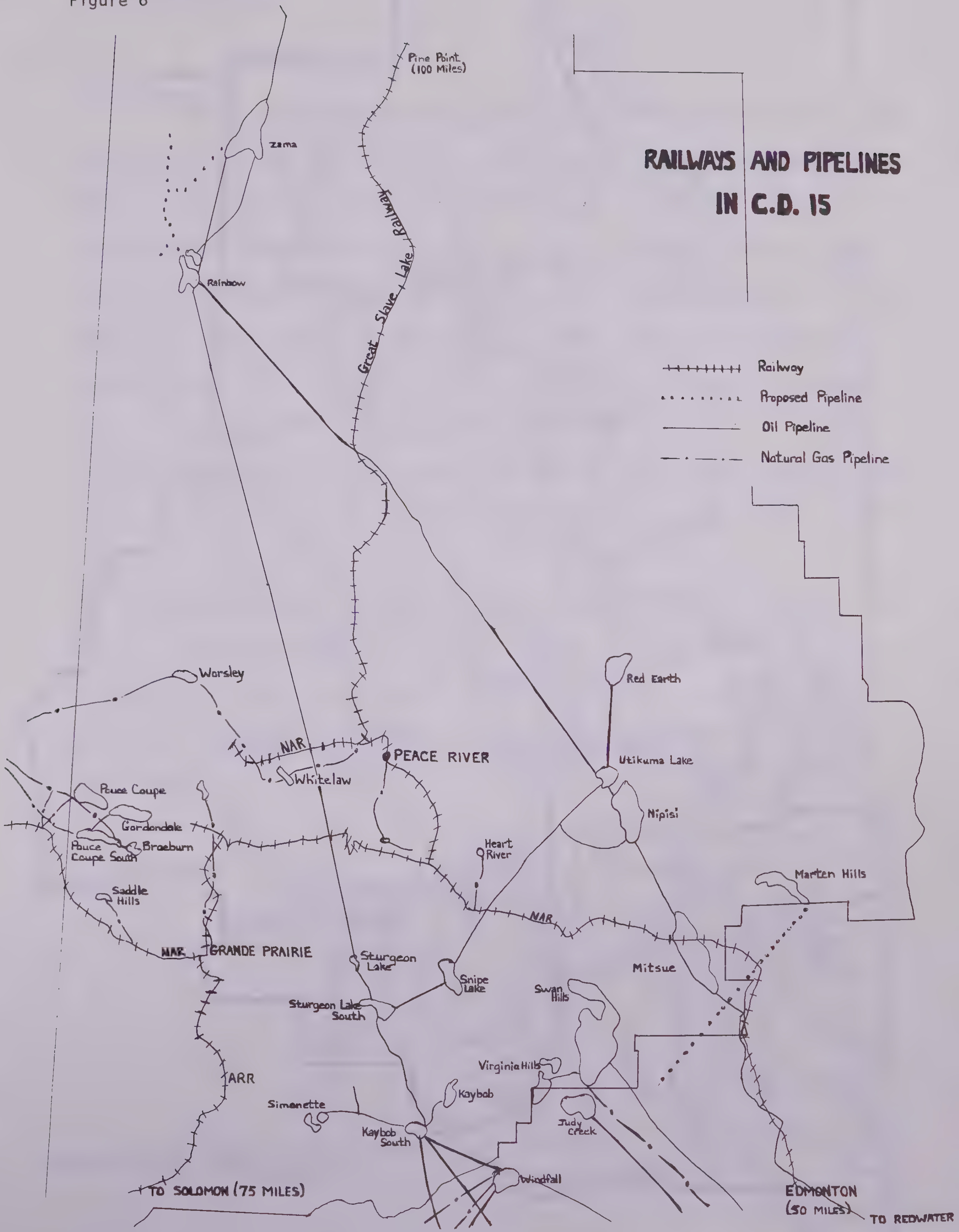
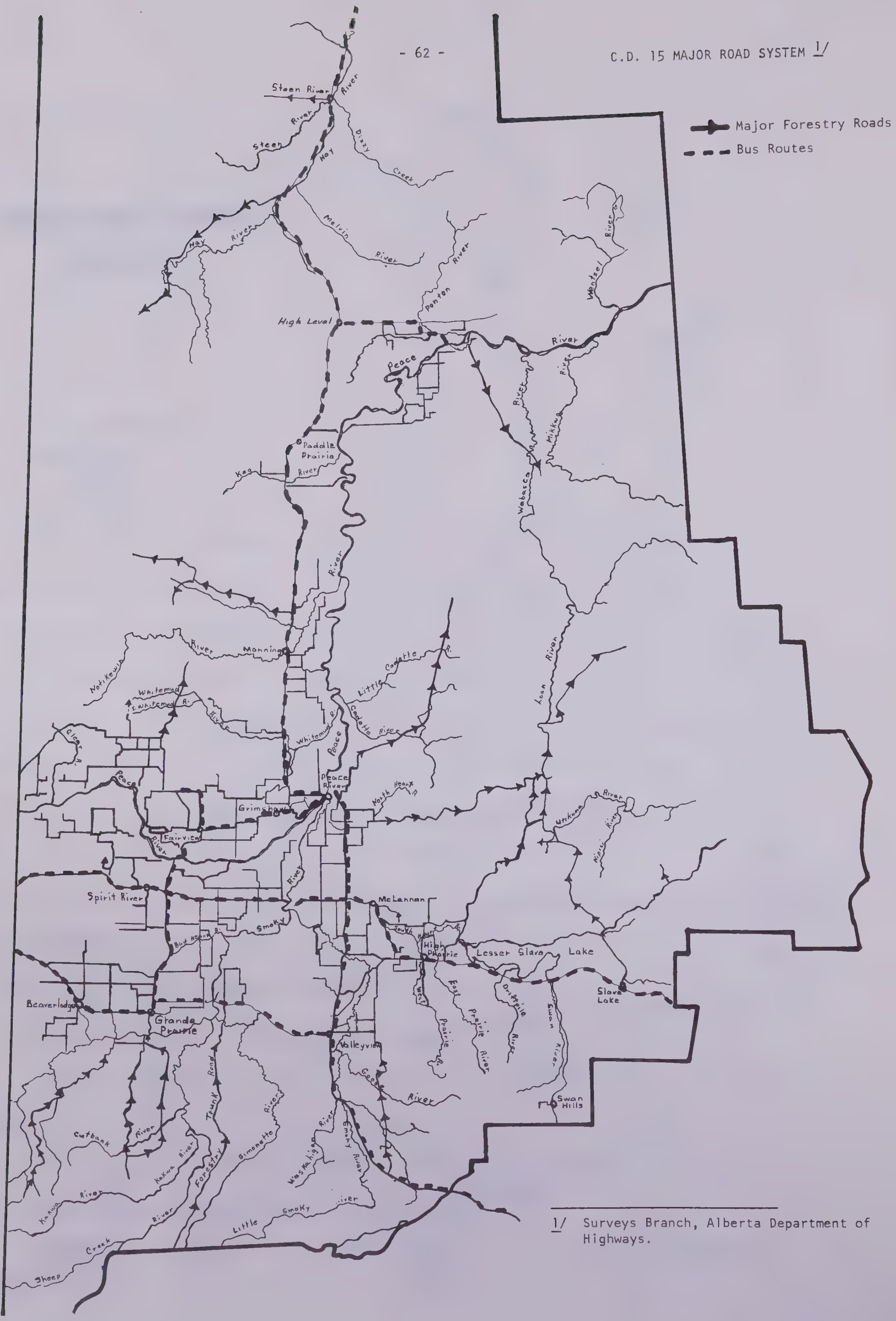

RAILWAYS AND PIPELINES
IN C.D. 15
Railway
Proposed Pipeline
Oil Pipeline
Natural Gas Pipeline
Pine Point (100 Miles)
Zama
Rainbow
Great Slave Lake Railway
Worsley
NAR
PEACE RIVER
Whitelaw
Pouce Coupe
Gordondale
Pouce Coupe South
Braeburn
Saddle Hills
Heart River
Red Earth
Utikuma Lake
Nipisi
Marten Hills
NAR
GRANDE PRAIRIE
Sturgeon Lake
Snipe Lake
Mitsue
Swan Hills
Sturgeon Lake South
Virginia Hills
ARR
Kaybob
Simonette
Kaybob South
Judy Creek
Windfall
TO SOLOMON (75 MILES)
EDMONTON (50 MILES)
TO REDWATER

Figure 7

C.D. 15 MAJOR ROAD SYSTEM [1/]



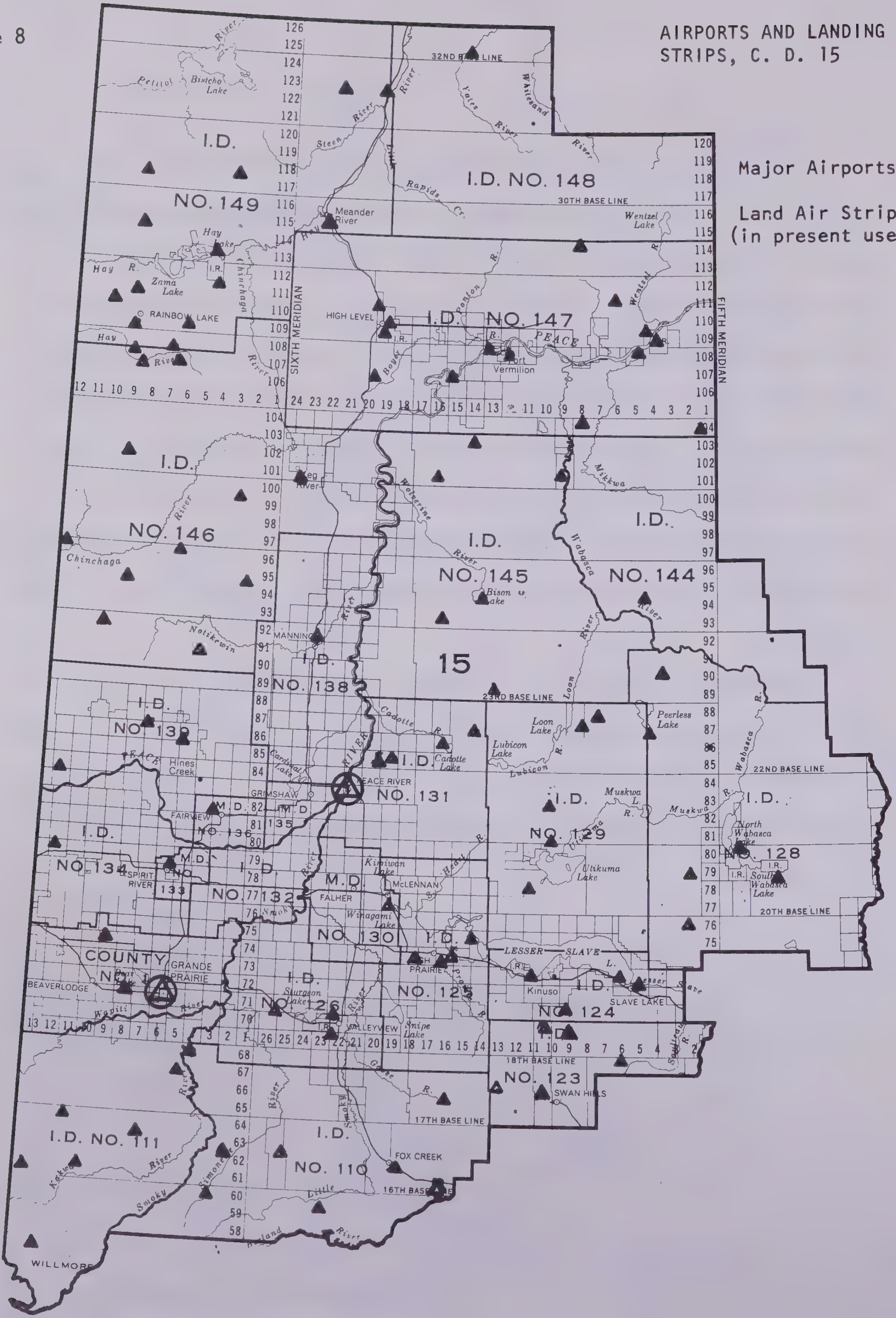
[1/] Surveys Branch, Alberta Department of Highways.

The airplane provides the primary means of transportation into a large portion of C.D. 15. Well over 100 air strips are located throughout the area with the Department of Lands and Forests caring for 74. Most of the remainder have been built by oil companies, although a few have been built by individuals or lumbering companies. As well as these air strips, there are 2 major airports; one located at Peace River and the other at Grande Prairie. The air strips range from 900 foot to 5000 foot runways with the majority being around the 3000 foot class. In addition, lakes provide landing sites for float-equipped planes in the summer and ski-planes in the winter. The map on Page 64 indicates the locations of most of the air strips.

Pipelines make up the last category of transportation facilities. In C.D. 15, these pipelines are responsible for moving over 77 million barrels of crude oil and 88 trillion cubic feet of natural gas annually. The map on Page 61 shows the location of these pipelines and the major fields they serve.

Figure 8

AIRPORTS AND LANDING STRIPS, C. D. 15



POWER

In C.D. 15, ample power potential exists. Thermal plants, fuelled by natural gas, could be constructed in any number of places since huge reserves of gas underlie much of the area. Development of this source depends mainly on increased demand for power within the area. Recently, studies have been undertaken to determine the feasibility of constructing a thermal plant near Grande Cache, which would use the tailings from the Smoky River Coal Development for fuel. The expected output would be 130,000 H.P. by 1974. Other than this location, no other coal deposits in C.D. 15 appear to be suitable for thermal plants. There is the possibility of hydro-electric power on the Smoky River and Peace River. The potential of the Smoky is estimated to be 500,000 H.P., while on the Peace, the only suitable site (at Dunvegan) would produce 400,000 - 500,000 H.P. It is unlikely that these hydro-electric potentials will be developed for many years, if ever, because of competition from thermal plants and insufficient demand for the quantity of power which must be generated to make a hydro plant economical. However, the demand for power in the Peace River country has been more than doubling every 8 years and a significant increase in industrial operations (such as a pulp mill) might make a hydro plant an economic possibility.

WATER RESOURCES

Water is increasingly being recognized as a scarce resource particularly in light of the interest expressed in the possibility of exporting water to the U.S.A. In northern Alberta, it is so plentiful that it is generally taken for granted and little economic value is attached to it. However, many industries require large volumes of water as one of the inputs and the presence of an ample supply is an important determinent in their location decision.

Most of the streams and rivers in C.D. 15 belong to the Peace River drainage basin which drains an area of some 124,000 square miles. There are a few streams and rivers along the southeast border of the census division which flow into the Athabasca River, but their volume is small compared with the total volume in the rest of C.D. 15. Similarly, the northwest corner of the census division is drained by the Hay River (and tributaries) which empties into Great Slave Lake.

The main tributaries of the Peace River are the Smoky, Little Smoky, Simonette and the Wapiti Rivers which all join the Peace River downstream from the town of Peace River. In the area north of the town to Lake Athabasca, only two major rivers, the Wabiskaw 1/ and Mikkwa Rivers, empty into the Peace River.

The table on the following page indicates the volume of water available for use at various points. By way of comparison, the average flow of the Athabasca River at the Hinton pulp plant is 6,560 cu. ft./sec. The average flow of the North Saskatchewan at Edmonton is 7,760 cu. ft./sec. This volume is sufficient to support the many industries in Edmonton which use large quantities of water . The average flow of the Peace at Peace

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1/ Sometimes spelled Wabasca.

River is 63,400 cu. ft./sec. which amounts to over 8 times the average flow of the North Saskatchewan at Edmonton.

Table 23 WATER FLOW RATES IN C.D. 15[1/]

	Average Flow (cu. ft./sec.)	Average Annual Flow (000 acre-feet)
Peace River at Peace River	63,400	46,250
Peace River at Ft. Vermilion	79,450	58,000
Smoky River at Watino	13,200	9,650
Wapiti near Grande Prairie	4,540	3,310
Little Smoky near Guy	1,920	1,420
Notikiwin near Manning	556	406

1/ (29)

RECREATION AND TOURISM

Recreation, in the form of hunting, is one of the more important areas in line for immediate development in C.D. 15. The area from the Peace River north to the Clear Hills supports the densest moose population in Alberta. An estimated 2 moose per square mile or a total of 9,000 inhabit this fairly small area. The area south of Lesser Slave Lake in the Swan Hills supports a moose population of around 5,600, while the area extending north of Highway 2 for about 100 miles contains another 11,600 moose. There are, therefore, an estimated 26,200 moose in C.D. 15, of which at least 1/4 could be harvested annually. The annual harvest of 7,000 moose would involve attracting a large number of people from outside C.D. 15. This would, in turn, provide a stimulus to the regional economy. The magnitude of the impact is impossible to determine in that almost no information is available on expected demand for the use of this resource. It is safe to say that the supply will exceed demand for a few years at least, in that the present use is far below the potential. If the people of the area deem exploitation of this resource as desirable, it can be assured that additional promotional efforts will increase the use of the resource.

Elk, deer, mountain sheep and bear are also present in fairly small numbers. Sharp tailed grouse and ruffed grouse are presently plentiful in the Peace River to Valleyview area. The supply of these birds follow a 10 year cycle with very few birds available during the bottom of the cycle. Ducks are in good supply while goose hunting is rated only moderate. The lakes and streams in the census division offer good potential for increased sports fishing. Presently the lakes and streams are fished to a minor extent and then mainly by residents of the area. If an economic stimulus to the economy of the region is to occur, people from outside the census division must be attracted into the area.

The major species inhabiting the waters are Dolly Varden trout in the south-western portion of the census division, lake trout in the north central portion, arctic grayling in the southwestern portion, walleye in the waters of the Peace, whitefish throughout most of the census division, and pike in south central lakes.

There are, in total, literally miles of the best possible beach areas surrounding the lakes. Numerous locations are suitable for cottage development.

In the southwestern corner of the census division, the Alberta Resources Railway cuts through some of the most scenic landscape in Alberta. The Swan Hills, south of Lesser Slave Lake, have some beautiful scenery, particularly in some of the more isolated areas. In both the above locations, opportunities exist for ski resorts.

Access to many of the lakes, rivers and other potential tourist developments is one of the major problems in establishing increased resource use. Some of the lakes are accessible by air only or perhaps by tracked vehicles or winch trucks. Coupled with inaccessibility, is the lack of facilities at the majority of these locations.

The above does not imply that no facilities are presently available for recreation and tourism. On the contrary, many parks, camp grounds, motels, hotels and restaurants are located throughout the area. In addition local groups have expended a good deal of effort in promoting the tourist potential of the area. However, the area has many more locations which are not presently exploited but which are capable of attracting tourists and tourist dollars.

RETAIL TRADE

Retail sales exhibited the same general trend in both C.D. 15 and Alberta, rising about 78% in both regions from 1951 to 1961. In C.D. 15, however, the number of stores increased by 30% which was almost twice the Alberta increase of 17%. Payroll expenditure rose by 140% in Alberta and 176% in C.D. 15. The actual figures are presented below:

Table 24 RETAIL SALES - ALBERTA AND C.D. 15
1951-1961 ($000) 1/

Area	No. of Stores		Sales		Payroll	
	1951	1961	1951	1961	1951	1961
Alberta	8,412	9,902	714,991	1,272,395	52,671	126,686
C.D. 15	487	634	30,639	54,585	1,548	4,279

Retail sales in C.D. 15 amounted to 4% of the Alberta total in both 1951 and 1961. At the same time, C.D. 15's population amounted to 7% in 1951 and 6% in 1961. This resulted in the following per capita situation:

Table 25 RETAIL SALES PER CAPITA
C.D. 15 & ALBERTA - 1951-1961 2/

	Sales ($000)		Population		Sales Per Capita		Deflated Sales per Capita*	
	1951	1961	1951	1961	1951	1961	1951	1961
C.D. 15	30,639	54,585	61,800	76,884	$498	$710	$438	$568
Alberta	717,991	1,272,395	939,501	1,331,944	$764	$955	$673	$764

* Consumer Price Index - 1949 - 100.0)
1951 - 113.5 (Edmonton and Calgary C.P.I.
1961 - 125.0)

1/ (15)

2/ ibid.

In 1951, sales per capita in C.D. 15 amounted to 65% of the Alberta per capita value but by 1961 this had risen to 74%.

Retail sales figures are available for Grande Prairie and Peace River for 1951 and 1961:

Table 26 RETAIL SALES FOR SELECTED CENTRES IN C.D. 15
1951 - 1961 1/

Centre	Sales		Population		Sales Per Capita	
	1951 $000	1961 $000	1951 No	1961 No	1951 $	1961 $
Grande Prairie	7,225.8	13,878.1	2664	8352	2712	1660
Peace River	3,813.6	6,499.5	1672	2543	2280	2556

The first point to note is that in both centres, sales per capita are much more than for C.D. 15 in general because they are trading centres. They service large trading areas and people from the surrounding rural areas make many of their purchases in the centres. The second point to note is that while per capita sales in C.D. 15 and Alberta rose by 42% and 25% respectively, the per capita sales growth in Peace River appear to have grown quite slowly and in Grand Prairie appear to have decreased. There are two reasons for this: Firstly they are trading centres serving a large rural population, secondly, rapid expansion of population has occurred in the two centres without a corresponding rise in the populations of the relevant trading areas. This tends to slow down the increase in per capita sales as in Peace River or even to decrease it, as in Grande Prairie. Whereas previously in Grande Prairie, the people of the surrounding trading area were the predominant influence, purchases by the people in the city itself, are beginning to balance this inflow and the per capita sales are

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1/ (15)

approaching the C.D. average.

Table 27 shows the composition of retail sales by type of outlet for 1961:

Table 27 RETAIL SALES BY TYPE OF OUTLET - 1961 [1/]

$000

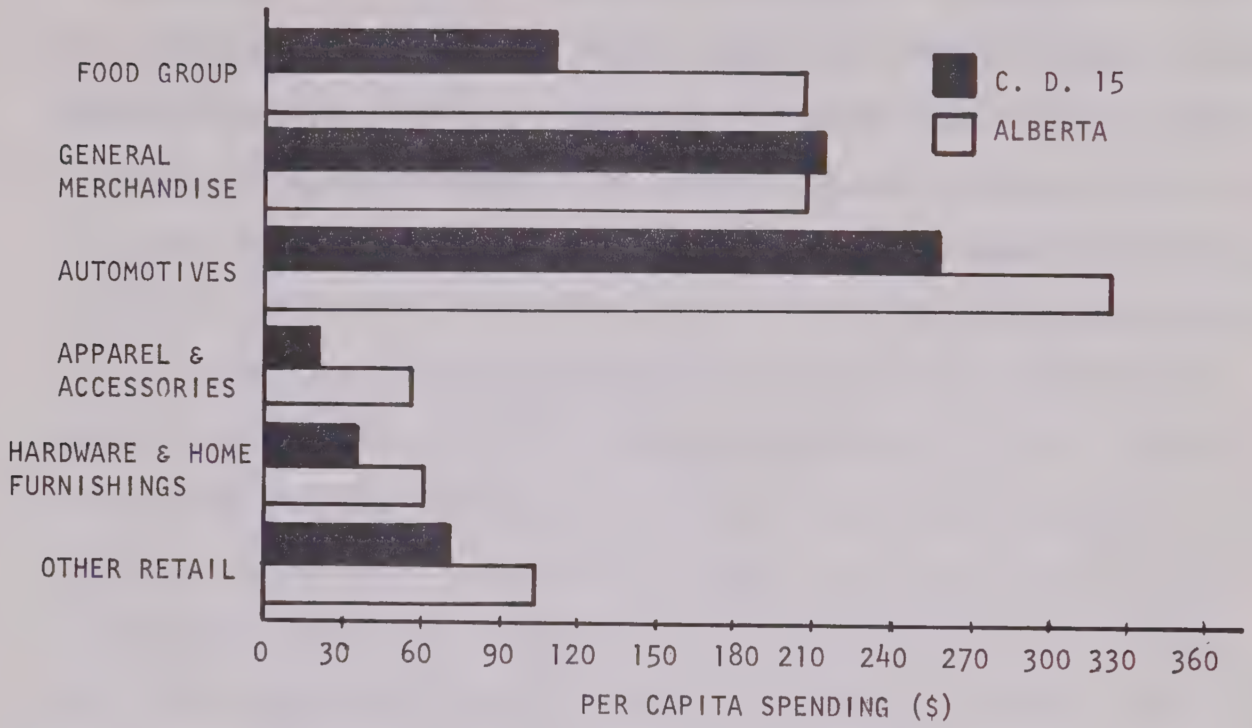
	Total Sales		Per Capita	
	C.D. 15	Alberta	C.D. 15	Alberta
Food Group	8,611.4	275,526.4	112	207
General Merchandise	16,343.1	273,528.7	213	205
Automotives	19,850.4	429,813.6	258	323
Apparel and Accessories	1,615.1	75,336.0	21	57
Hardware & Home Furnishing	2,740.4	81,708.4	36	61
Other Retail	5,424.6	136,481.8	71	103

Figure 9 gives a comparison of the per capita sales for C.D. 15 and Alberta. In 5 out of 6 categories, sales per capita in C.D. 15 are significantly lower than in Alberta. The one category in which C.D. 15 shows higher per capita sales is 'General Merchandise'. The general store still maintains an important role in rural areas, whereas in Alberta in general, with over 2/3 of the population in urban areas, many of the functions of the general store would be included under the other five categories.

[1/] (15)

Figure 9 RETAIL SALES PER CAPITA BY TYPE OF OUTLET

C.D. 15 & Alberta - 1961 1/



The Alberta Bureau of Statistics provide estimates of retail trade for the years after 1961, which are not strictly comparable with census data used previously in this section. However, their system of reporting was altered in 1962-63 so that only the following values give an estimate of current trends:

Table 28 RETAIL SALES - C.D. 15 and ALBERTA 2/

1963 - 65

	C.D. 15 ($000)	Percent Increase	Alberta ($000)	Percent Increase
1963	61,003		1,478,495	
1964	64,133	5	1,507,590	2
1965	72,308	13	1,688,508	11
1966	81,976	13	1,814,331	8

1/ (15)

2/ (3)

Retail sales in C.D. 15 appear to be expanding slightly faster than for Alberta in general. In part, this results from the relatively higher population growth in C.D. 15 of 14% from 1961 to 1966, compared with 10% in Alberta over the same period. However, part of this additional increase in C.D. 15 is likely a reflection of the fairly rapidly increasing income from the accelerated exploitation of natural resource industries over the past five years.

WHOLESALE TRADE

Wholesale trade expanded rapidly in C.D. 15 in the decade from 1951-1961. The increase amounted to 88% compared to 39% for Alberta as a whole. The wholesale trade firms are engaged in selling goods which will ultimately be resold either in the same form or incorporated into another product. This covers sales to farmers of: fertilizers, feeds, machinery and other supplies to: industrial, commercial, institutional and professional users.

Wholesale firms usually locate where there is a fairly concentrated population since their function is mainly distributive. In 1951, much of the wholesale function in C.D. 15 was attended to by firms in Edmonton. As the population expanded in the census division, and in particular, in the city of Grande Prairie and smaller centres, the need grew for local wholesale firms which could satisfy demands for products immediately. Much of the activity centered in Grande Prairie since it was the largest center and had the fastest rate of growth. By 1961, wholesale sales in Grande Prairie amounted to nearly 20% of the census division total, although the population amounted to only about 11%.

The higher growth rate of wholesale sales in C.D. 15 was due mainly to the following reasons:

a) general overall growth in terms of population, income and industry,
b) transferal of wholesaling function from outside the area (Edmonton) to inside,
c) excellent crop in C.D. 15, particularly when compared with the Alberta crop.

The wholesale statistics are presented on the following page:

Table 29

WHOLESALE SALES [1/]

ALBERTA & C.D. 15 - 1951 & 1961

	No. of Locations		Sales ($000)		Payroll ($000)	
	1951	1961	1951	1961	1951	1961
C.D. 15	182	231	25,427.0	47,734.9	879.3	2,134.2
Alberta	3,071	3,322	1,041,693.1	1,450,855.3	45,776.5	81,065.5

In addition to the above increases in sales, payroll expenditures increased by 142% in C.D. 15 but only by 77% in Alberta. At the same time, the number of establishments increased by 27% in the former compared with 8% in the latter.

As the following table shows, per capita sales in Alberta decreased during the period but increased in C.D. 15. The decrease in the Alberta values points out the diminishing importance of the wholesale firm, particularly in the large urban centers. Their function is, in many industries, being by-passed by direct selling. This evolution has occurred in the large urban centers (Edmonton and Calgary) while at the same time, volume in the smaller urban centers, has increased.

Table 30

WHOLESALE SALES PER CAPITA

C.D. 15 & ALBERTA - 1951 & 1961 [2/]

	Per Capita Sales		Deflated* Per Capita Sales	
	1951	1961	1951	1961
C.D. 15	411	621	171	266
Alberta	1,109	1,089	462	467

* Canadian Wholesale Price Index - 1935-39 = 100
1951 = 240.2
1961 = 233.3

[1/] (17)

[2/] (17) & (34)

SERVICE TRADE

The Dominion Bureau of Statistics includes the following in the service trade: theatres, bowling alleys, barber shops, beauty salons, laundries, hotels, repair shops, accountants, lawyers and other similar activities. The service trade sector has expanded rapidly in the decade from 1951 to 1961. In C.D. 15, receipts for services rendered increased 117% from $5.3 million in 1951 to $11.5 million in 1961. The Alberta increase amounted to 100%. Payroll expenditures of service establishments increased by 207% in C.D. 15 compared with a 156% increase in Alberta.

Table 31

SERVICE TRADE
C.D. 15 AND ALBERTA [1/]

	No. of Locations		Receipts ($000)		Payroll ($000)	
	1951	1961	1951	1961	1951	1961
C.D. 15	249	324	5,287.0	11,488.1	666.8	2,048.7
Alberta	4,504	5,921	118,710.8	238,268.2	24,407.0	62,382.0

The per capita service expenditures have also shown an encouraging trend in C.D. 15. In 1951, receipts per capita amounted to 68% of the Alberta figure. By 1961, the per capita figure for C.D. 15 had risen to 84% of the Alberta average.

Table 32

SERVICE RECEIPTS PER CAPITA [2/]

	Receipts ($000)		Population		Sales/Capita		Deflated Sales/Capita	
	1951	1961	1951	1961	1951	1961	1961	1961
C.D. 15	5,287.0	11,488.1	61,800	76,884	$ 86	$150	$	
Alberta	118,710.8	238,268.2	939,501	1,331,944	$126	$179	$	

[1/] (16)

[2/] (16) & (34)

Per capita receipts in Peace River and Grande Prairie were much greater than the census division averages. The table below again emphasizes the importance of Peace River and Grande Prairie as centers for different trading areas. It appears that Peace River has provided services to proportionally more people in the surrounding area than has Grande Prairie, since the per capita receipts are higher in the former. However, the population of Grande Prairie has increased four times as fast as in Peace River, and all things remaining equal, this should have produced a decrease in receipts per capita in Grande Prairie. Since the per capita receipts actually increased, the implications are: 1) a greater number of people in the trading area availed themselves of services in that city or 2) the people in the surrounding areas purchased more services than before or 3) that the per capita spendings of the citizens of the city was substantially greater than the rest of C.D. 15. A combination of all three of the above was likely responsible for the increase. The subject of trading areas will be discussed further in a later portion of the report.

Table 33

SERVICE RECEIPTS FOR GRANDE PRAIRIE AND PEACE RIVER [1/]

	Receipts ($000)		Receipts Per Capita	
	1951	1961	1951	1961
Peace River	768.0	1,223.6	$459	$481
Grande Prairie	750.0	2,708.5	$281	$324
C.D. 15	5,287.0	11,488.1	$ 86	$150

The table on the following page shows the service receipts by type of outlet in 1961:

[1/] (16)

Table 34 SERVICE RECEIPTS - C.D. 15 & ALBERTA - 1961 [1/]

	Total Receipts ($000)				Per Capita	
	C.D. 15	%	Alberta	%	C.D. 15	Alberta
Amusement & Recreation	926.0	8.1	16,972.7	7.1	12.00	12.70
Business Services	126.6	1.1	17,553.1	7.4	1.60	13.20
Personal Services	675.4	5.9	28,463.9	11.9	8.80	21.40
Repair	201.3	1.8	8,836.2	3.7	2.60	6.60
Undertaking & Funeral	185.6	1.6	4,571.4	1.9	2.40	3.40
Photography	59.6	0.5	3,768.4	1.6	.80	2.80
Miscellaneous	2,383.3	20.7	23,760.3	10.0	31.00	17.80
Hotel, Tourist Camp and Restaurant	6,930.3	60.3	134,342.2	56.4	90.20	100.90
TOTAL	11,488.1	100.0	238,268.2	100.0	149.40	178.80

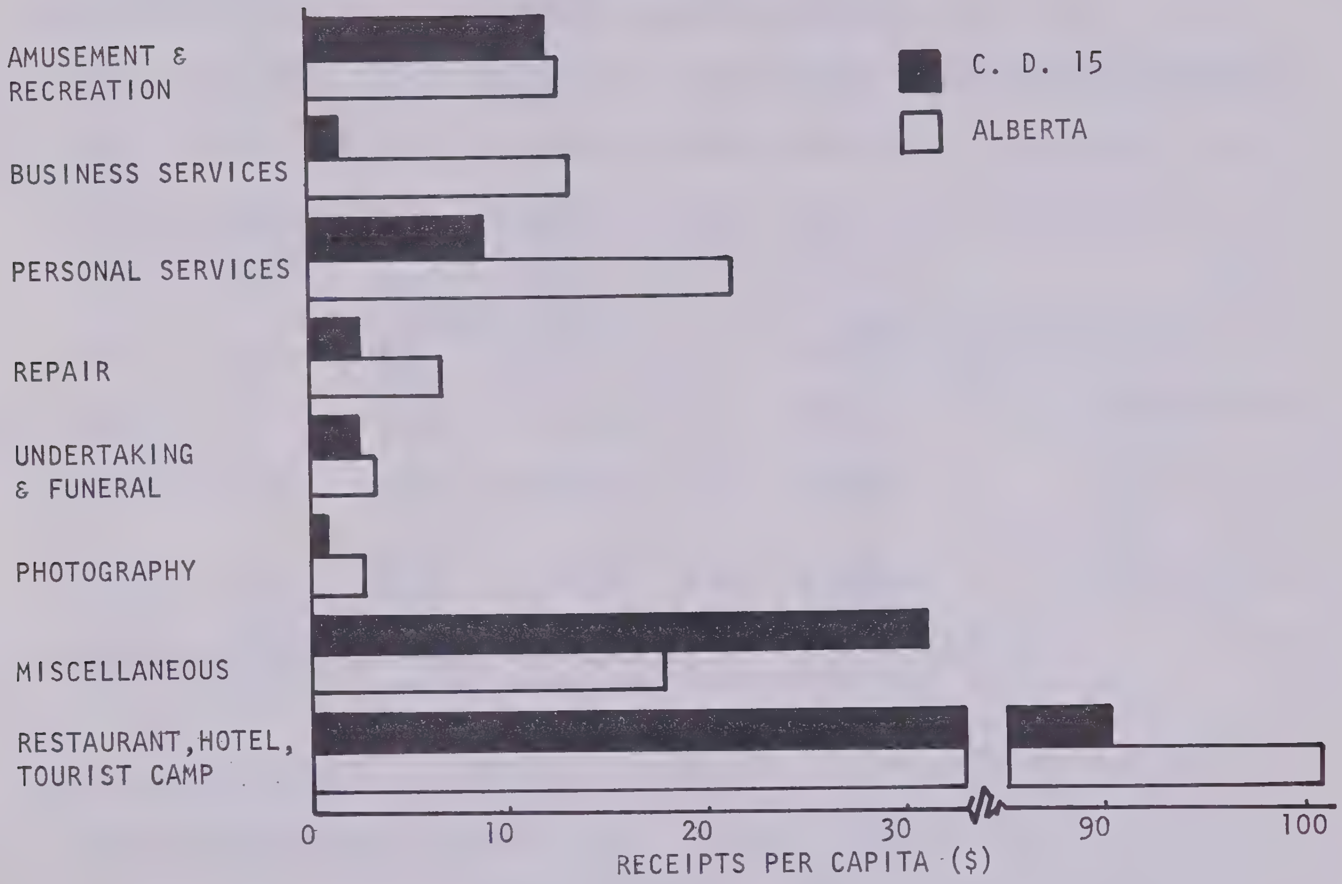
The service trade in C.D. 15 compares favourably with Alberta in a few categories such as amusement, funeral, hotel, tourist camp and restaurant, and miscellaneous which includes automobile rental agencies, collection agencies and janitor agencies. Per capita receipts by these outlets were fairly close to the Alberta values. The area lags far behind Alberta in such things as business, personal, repair and photography services.

Most of the receipts for services arose from the hotel, restaurant and tourist camp facilities in both C.D. 15 and Alberta.

[1/] (16)

Figure 10 SERVICE RECEIPTS PER CAPITA

C.D. 15 & ALBERTA - 1961 1/



The Alberta Bureau of Statistics provides figures for a large portion of the service industry as follows:

Table 35 SERVICE RECEIPTS - C.D. 15 & ALBERTA 2/

	C.D. 15		Alberta*	
	($000)	% Increase	($000)	% Increase
1963	8,270		211,950	
1964	7,608	(8.0)**	202,469	(4.5)
1965	8,785	15.5	219,953	8.6
1966	10,114	15.0	236,345	7.4

* Excluding C.D. 15 figures

** Denotes a decrease

1/ (16)

2/ ibid.

Whereas, the above values do not include all service establishments, they do point out differences between C.D. 15 and the rest of Alberta. First of all, the service sector in C.D. 15 appears to be more volatile in that both rates of decrease and rates of increase are higher than for Alberta. Secondly, since 1964 the rate of increase in service receipts has been about twice as high in C.D. 15 as for the rest of Alberta. In particular, the hotel, tourist camp and restaurant group have shown increased sales of 50% in C.D. 15 compared with 25% for Alberta. This group makes up 85% of the service trade in C.D. 15 and 72% in Alberta. This group, then, is responsible for the rapid rate of increase in C.D. 15, relative to Alberta. It is a reflection of the tremendous activity in the search for oil in C.D. 15 plus the additional jobs in the forest industry, plus the increasing tourist trade.

LABOUR FORCE

Labour force statistics illustrate the relative importance of the industries in the area. In 1961, the last year for which these statistics are available, the composition of the labour force was as follows:

Table 36 LABOUR FORCE BY INDUSTRY
ALBERTA & C.D. 15 - 1961 1/

	C.D. 15		Alberta
	No.	%	%
Agriculture	10,325	41.1	21.2
Forestry	890	3.6	0.6
Fishing and Trapping	485	1.9	0.2
Mines, Quarries and Oil Wells	594	2.4	3.5
Manufacturing	950	3.8	8.6
Construction	1,352	5.4	7.6
Transportation, Communication and Utilities	2,345	9.4	9.6
Trade - Retail	901	7.6	10.7
Wholesale	820	3.3	5.7
Finance, Insurance and Real Estate	331	1.3	3.0
Services - Personal	1,239	4.9	6.3
Business and Community	2,459	9.8	12.8
Public Administration and Defence	726	2.9	7.9
Other	643	2.6	2.3
TOTAL	25,050	100.0	100.0

1/ (19)

In 1961, agriculture accounted for by far the largest share of the labour force. The forestry and oil industries employed only a total of 6% of the labour force.

A further grouping illustrates the differences in the major type of work in C.D. 15 and Alberta. Primary industry includes all the industries which take their output directly from the natural state (i.e. mining, forestry, fishing, agriculture). Secondary industry includes those industries which use the output from the primary sector as inputs for their products (i.e. manufacturing, construction). Tertiary industry includes all those providing some kind of service either to individuals or other businesses. This latter industry is not a wealth producing one,[1] but rather it facilitates the exchange, purchase or control of other products from the primary and secondary industries, or provides service to consumers.

Table 37 LABOUR FORCE BY MAJOR INDUSTRY GROUPING [2]
-1961-

	% Employed	
	C.D. 15	Alberta
Primary Industry	49.0	25.5
Secondary Industry	9.2	16.2
Tertiary Industry	39.2	56.0

One can see immediately that C.D. 15 had proportionally twice as many people employed in the primary industry than has Alberta and consequently, the area depends to a large degree on the exploitation of natural resources for income and employment. Secondary industry provided employment for proportionally fewer people in C.D. 15 than in Alberta - 9% in the former and 16% in the latter.

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[1] i.e. This sector does not export its production and therefore, does not bring money into an area.

[2] (19)

The primary industry is of even more importance when the relationship between it and the tertiary industry is noted. Income earned in the primary sector is used to purchase goods and services from the tertiary sector. Similarly, secondary industry is a wealth-producing industry, so that income earned there is spent in the tertiary industry. Insofar as half of the labour force is employed in primary industry, the tertiary industry depends to a large degree on earnings in the former. If, for example, net farm income falls as a result of poor crops, higher costs, or lower prices, then less money is available to buy goods and services and activity decreases in the tertiary industry, perhaps resulting in unemployment or at least, underemployment in the latter.

An occupational breakdown shows the types of positions held by people in C.D. 15 in 1961:

Table 38 LABOUR FORCE* BY OCCUPATION 1/

C.D. 15 & ALBERTA - 1961

Occupation	C.D. 15		Alberta
	No.	%	%
Managerial	1,674	6.7	8.5
Professional and Technical	1,636	4.4	9.5
Clerical	1,100	4.1	11.3
Sales	1,024	4.1	6.5
Service and Recreation	1,903	7.6	12.1
Transportation and Communication	1,167	4.7	5.8
Farmers and Farm Workers	10,275	41.0	21.3
Loggers, Fishermen, Trappers and Hunters	1,202	4.8	0.6
Miners and Related Workers	355	1.4	1.1
Craftsmen, Production and Related Workers	3,129	12.5	17.0
Labourers	926	3.7	4.0
Not Stated	664	2.6	2.3
TOTAL	25,055	100.0	100.0

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* Defined by D.B.S. as that portion of the population 15 yrs. of age and over.

1/ (22)

In all occupational categories except two, (1) farmers and (2) farm workers, loggers, fishermen, trappers and hunters, the proportion employed in C.D. 15 was less than for Alberta. This reflects the lesser degree of industrialization and urbanization in C.D. 15. In the clerical, service and recreation categories, which generally provide job opportunities for many of the unskilled people and teenagers, C.D. 15 has only one half the proportion employed in Alberta. This may lead to an outflow of the younger people in the area to the larger cities where opportunities are greater.

Mention should be made here of a statistical problem prevalent to this area. This data is collected on a 'permanent residence' basis, i.e. if a person works in one area and maintains a permanent residence elsewhere, he is included in the labour force data in the latter area. Both the oil and forestry industries offer seasonal work, and many employees are brought in from other parts of the province. Many of these people would never be included in the figures for C.D. 15, but rather would be listed at their place of permanent residence. Another problem is that these two industries reach employment peaks in the winter months and the census was taken during the summer when the seasonal employees are more likely to be in other areas. The result is that employment figures for the oil and forest industries are likely to be conservative. However, partially offsetting this is the seasonal nature of the construction industry which operates mainly during the summer. The net result is that the total labour force actually working in the area is likely underestimated and that the effects on the area economy are not directly correlated with the labour force composition. That is, it would be misleading to say that "... agriculture is by far the most important sector in the area economy ...." simply on the basis of labour force composition.

Mention should also be made here of another statistical problem. When the census was taken, the first question asked of a person was if he farmed at all. If so, then regardless of whether this was his principal occupation, he was classed as a farmer. In C.D. 15, many people in the construction, oil and forest industries have taken out homesteads, but they depend on earnings in the former occupations for most of their income. The farm may be something of a hobby or a form of land speculation; in either case, the owner is classed as a farmer.

In 1961, those classed as farmers in C.D. 15 worked a total of 1560 man-year equivalents off the farm. 1/ This represented almost 18% of the provincial total of part-time, off-farm work of farmers. At the same time, C.D. 15 had only 13% of the total farms. This illustrates the relative importance of other jobs to the farmers in C.D. 15.

Once again, the labour force figure for agriculture would tend to be overstated due to the above influence. Therefore, the economic impact of agriculture on the local area would tend to be slightly overestimated if labour force composition was taken as the only measure of the impact.

A number of events have influenced the composition of the labour force in C.D. 15 since 1961. The greatest impact has occurred because of the Rainbow Lake oil discovery. In 1961, 594 people were employed in the mines, quarries and oil well industry. The discovery of this field brought an estimated 5,000 people into the area in the winter months of 1966, with about 3,000 expected in the fall of 1967. Of course, this additional labour force is not permanent and will move out as exploration activities diminish. However, it can be expected that a few additional people will be added to this industrial sector since some permanent facilities (such as pumping

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1/ 300 days of work/year.

stations) will be constructed.

The construction of the Alberta Resources Railway and the pipelines in the area has increased the proportion of people employed in the construction industry. For example, more than 1,000 men were employed in the summer of 1967 on the building of the railway. Once again this is, for the most part, a temporary influence.

The number of people employed in the fishing and trapping industry has decreased, both in absolute numbers and on a percentage basis since rising costs have forced a number of operators to quit.

Values derived from the 1966 census shows almost no change in the number of census farms, so that it is likely that there were about the same number of people employed in agriculture in C.D. 15 in 1961 and 1966. Since the total labour force was, no doubt expanding, this would imply that the per cent of labour force employed in this occupation has decreased somewhat.

The increases in retail sales and service receipts and particularly in payrolls in the trade industry mean that an increasing number of people found employment in this sector. Employment in the manufacturing industry increased by about 20% from 1962 to 1965.

The number of workers employed in the forest industry has increased quite rapidly since 1961. The northern area near High Level, has been developed and a large planing mill has been built there to finish the lumber from the area. In the southern part of the census division, production has remained fairly constant during the period. Employment in the forestry industry is very seasonal. For example, an estimated 2,200 men are employed in logging and sawmill operations from November to March; during the rest of the year the number employed decreases to some 500. Much of this seasonal demand for labour is supplied by the farmers who work in the forests during the winter months to supplement their farm earnings. Until 1965, this was a major part-time occupation, but since the Rainbow Oil Field discovery, many of the farmers are working on the rigs and on construction projects resulting from the oil activity. The 1965-66 logging season was hampered by a labour shortage as many of the usual workers found jobs in the oil industry. However, during the 1966-67 season, the labour shortage eased somewhat and most of the logging camps and sawmills were able to find the necessary workers.

Unemployment figures are unavailable for the area, but an estimate of some of the trends can be made based on unplaced applicant figures. The following table gives these estimates for the two major seasons of each year, from November to April and from May to October, for the Grande Prairie zone.

Table 39 UNPLACED APPLICANTS 1/

GRANDE PRAIRIE ZONE

	% Unplaced - WINTER		% Unplaced - SUMMER		Summer/Winter Ratio*
1962	Nov. 61 - Apr. 62	5.39%	May 62 - Oct. 62	3.14%	59
1963	62 - 63	5.48%	63 - 63	3.35%	61
1964	63 - 64	5.02%	64 - 64	3.35%	67
1965	64 - 65	4.69%	65 - 65	3.00%	64
1966	65 - 66	3.59%	66 - 66	2.39%	66
1967	66 - 67	2.81%	67 - 67	3.19%	113
1968	67 - 68	2.54%	68 - Jul. 68	2.45% 2/	96

* Ratio refers to the percentage unplaced in summer as compared to winter.

1/ (8)

2/ 3 month period average from May 1968 to July 1968.

Before proceeding, it should be noted that these are not true unemployment rates. Historically, these figures have averaged about 25% above the true unemployment rates on a provincial basis. Since there are no rates calculated for smaller areas, the unplaced applicant series provides the only indications of trends in employment. Another problem is that the Grande Prairie Zone covers only about one half of the census division's area. It does, however, include about 70% of the non-farm population and about 50% of the farm population.

Two different points should be emphasized: Firstly, there are seasonal differences every year, secondly, both the winter and summer rates of unemployment have shown a general declining trend during the past five years.

Regarding the seasonal differences, there is a significant increase in unplaced applicants in the construction, transportation and unskilled occupations during the winter season. Partially offsetting this increase, is a decrease in the number of unplaced applicants in the mineral extraction occupations. The decline in both summer and winter percentage ratios has been due to a general decrease in almost all unplaced applicant occupation groupings. However, the greatest influence has been the relatively significant decreases in the ratios for construction, transportation and unskilled occupations. This is particularly noticeable in the values from 1965 to 1967. The Rainbow Lake Oil discoveries are likely the main reason. The $\frac{\text{summer}}{\text{winter}}$ ratio has increased during the period, reflecting a decrease in the seasonal nature of employment in some occupations. In 1967, this ratio increased sharply as a result of a substantial decrease in the winter unplaced applicant percentage. This was due partly to additional employment during the winter in the forest industry as output increased by almost 40% from the 1966 levels.

The winter percentage has decreased steadily and likely results from the additional employment to be found in the forest and oil industries during the winter.

In summary, assuming that these statistics reflect the actual employment trends, there has been an overall improvement in the employment picture in the area. More jobs are available, particularly in the transportation, construction and unskilled occupations in both summer and winter seasons. In addition, the declining summer season ratio, combined with the rising $\frac{\text{summer}}{\text{winter}}$ ratio implies that the employment in the winter months has increased proportionally more than that in the summer months. In other words, the seasonal nature has diminished somewhat. One cause of this may be that the occupation mix has become more complimentary. That is, construction workers who might have, in previous years, been unemployed during the winter, are now finding employment in the oil or forest industries during the winter. Similarly, the increased income and expenditures in the area, has probably resulted in more year-round employment in the service and trade industries, particularly since the construction-forestry-oil relationship tends to even out differences in expenditures in the summer and winter seasons.

INCOME

Non-Farm Income

Family Income -

Table 40 separates total non-farm family income into three major divisions:

Table 40 TOTAL FAMILY INCOME BY INCOME GROUPS
NON-FARM - 1961
ALBERTA AND C.D. 15 1/

Income Group	Alberta %	C.D. 15 %
Up to $3,000	20.6	36.8
$3,000 - 6,999	56.6	49.7
$7,000 and up	22.8	13.5
TOTAL	100.0	100.0

An income level of $3,000 per family has been used in most of the recent publications as the minimum requirements for an acceptable standard of living. It is also the value used by ARDA to designate low income areas. This applies particularly to non-farm families, for they are generally dependent upon income as the main means of obtaining goods and services. In Alberta, 21% of the non-farm families earned less than $3,000, while in C.D. 15, 37% earned less than this figure. Of this group, 12.5% of the families in C.D. 15 earned under $1,000, while in Alberta the figure was 4.5%. The average family income in C.D. 15 amounted to $4,361 which was 22% below the provincial average of $5,602.

Table 41 shows the percentage of people not in families by income group for 1961. (See Page 92).

1/ (21)

The income distribution for people not in families in C.D. 15 approximates that of Alberta with the exception of the "less than $1,000" group. In C.D. 15, 42% of the people not in families received less than this amount, while in Alberta only 33% received less than $1,000. Average income in C.D. 15 was $1,926, which amounted to about 84% of the provincial average of $2,285.

Table 41 INCOME OF PEOPLE NOT IN FAMILIES - NON-FARM
ALBERTA & C.D. 15 - 1961 [1/]

	Alberta %	C.D. 15 %
Without Income	5.0	7.1
Up to $1,000	28.4	35.0
$ 1,000 - 1,499	10.5	10.9
1,500 - 1,999	8.2	8.4
2,000 - 2,499	9.3	8.3
2,500 - 2,999	7.5	7.2
3,000 - 3,999	16.7	12.3
4,000 - 4,999	7.0	5.3
5,000 - 5,999	3.2	2.2
6,000 - 7,999	2.5	1.6
8,000 - 9.999	0.9	1.0
10,000 - Up	0.8	0.7

In summary, the average family income in C.D. 15 is 22% lower than the Alberta average and proportionally more families in the former area have incomes below $3,000.

For those people not in families, the income distribution in C.D. 15 more closely follows the Alberta distribution, although the average income for C.D. 15 of $1,926 is still below the Alberta average of $2,285.

[1/] (21)

An analysis of the source of income brings out a number of interesting comparisons between C.D. 15, C.D. 12 and Alberta. C.D. 12 is included because it covers the other half of northern Alberta and provides some interesting comparisons.

The table below emphasizes the similarity in the sources of income for the non-farm population in C. D. 12 and C. D. 15. Employment income proportions in all these areas is approximately the same. However, transfer payments are a higher proportion in both census divisions than in Alberta as a whole. On the other hand, investment and other income in Alberta was proportionally twice the figures for the census divisions.

Table 42 INCOME RECEIVED, NON-FARM POPULATION OVER 15 YEARS - 1961
C.D. 15, C.D. 12 & ALBERTA [1]

($000,000)

	EMPLOYMENT INCOME			TRANSFER PAYMENTS			MISCELLANEOUS INCOME	
	Total Income	Wages and Salaries	Self-Employed	Family Allowances	Old Age Pensions	Other Government Income	Investment Income	Other Income
C.D. 12	24.8	17.9	3.5	1.0	1.1	0.6	0.5	0.2
Percent	100.0	72.1	14.1	4.0	4.4	2.4	2.0	0.8
C.D. 15	47.0	33.8	7.8	1.5	1.3	1.1	1.1	0.4
Percent	100.0	72.0	16.6	3.2	2.8	2.3	2.3	0.8
Alberta	1553.0	1187.8	183.9	29.0	33.5	28.0	66.0	24.8
Percent	100.0	76.5	11.8	1.9	2.2	1.8	4.2	1.6

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[1] (18)

If per capita estimates are made, even more striking differences show up:

Table 43 NON-FARM TOTAL INCOME - PER CAPITA INCOME
1961 1/

Area	Total Income* ($ Millions)	Non-Farm** Population	Per Capita Non-Farm Income
C.D. 12	24.8	28,696	$ 864.00
C.D. 15	47.0	44,804	$1,049.00
Alberta	155.3	808,252	$1,921.00

* Aggregate income of those over 15 years of age - non-farm
** Total non-farm population (all age groups).

If the total income per capita is put in terms of its component parts of employment income, transfer payment, investment income and other income, the following points emerge:

Table 44 TOTAL INCOME BY COMPONENTS - NON-FARM - 1961
BY $ PER CAPITA 2/

Area	Total Income	Employment Income	Transfer Payments	Investment Income	Other Income
C.D. 12	$ 864	$ 746	$ 94	$17	$ 7
C.D. 15	1,049	928	87	24	9
Alberta	1,921	1,697	112	82	30

In all categories, income per capita is less in both C.D. 12 and C.D. 15 than in Alberta. The major difference lies in earnings from employment where per capita income in C.D. 15 was 55% of the Alberta value. The C.D. 12 value was lower, with employment earnings amounting to only 44% of the Alberta value. Transfer payments were the second most important sources of income.

1/ (18)
2/ ibid.

These included family allowances, old age pensions, as well as pensions and relief for veterans, widows, blind people and disabled people. It does not include direct welfare payments made by any of the levels of government.

Investment income in both census divisions was only a fraction of the Alberta figure. Insofar as investment income is a reflection of the level of savings, it appears that savings in the two census divisions are relatively low compared with Alberta.[1/] In other words, it appears that employment income in the census divisions is not sufficiently great to produce a pool of savings which could be channelled into investment opportunities which in turn would provide income in the future in the form of investment income.

'Other income' per capita in the census divisions was only a fraction of the Alberta average. This category includes all other cash income receipts such as net income from roomers and income from annuities.

While income per capita in all categories was lower in C.D. 15 and C.D. 12, the most important difference was in employment earnings. Since all persons over 15 years of age were asked to report their income, the per capita earnings may have been lowered proportionally more in the census divisions. Job opportunities for teenagers in the rural non-farm areas are often restricted compared with openings in the larger centers, the choice of age 15 would effectively reduce the per capita figures relatively more in the two census divisions. However, per capita income, after considering this, would still be considerably less than for Alberta as a whole.

Farm Income

The value of agricultural products sold by the 8,955 farmers in C.D. 15 totalled to $27.3 million in 1961. This meant an average sale value of $3,050

1/ This same condition holds for census divisions 13 and 14 as well. In the other Alberta C.D.'s the investment income percentages range from 4% to 6% compared with 2% to 3% for the four above mentioned C.D.'s.

per farm operator. To supplement this income, many of the farmers engaged in off-farm employment and the total income received was approximately $5.9 million. The sum of these two sources was $33.2 million, which represented an average total operator income of $3,707.

The following table illustrates the total operator income distribution of the farm operators in C.D. 15.

Table 45 TOTAL* FARM OPERATOR INCOME IN C.D. 15
1961 1/

	0-999	1,000-1,999	2,000-2,999	3,000-3,999	4,000-4,999	5,000-6,999	7,000-9,999	10,000 and up
No. of Farms	1,155	1,502	1,709	1,451	1,062	1,149	592	315
Percent	12.9	16.8	19.2	16.2	11.9	12.9	6.6	3.5

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* Includes value of products sold and off-farm work of those classed as farmers.

About one-half of the farm operators had an income of under $3,000. Since the average income was $3,707, there had to be a relatively large number of higher incomes to compensate for those farmers with less than $3,000 average income.

One revision should perhaps be made to these figures, and that is to adjust the income figures for the 862 residential farmers in the area. These so-called farms had sales of less than $250 and as such were a very insignificant influence in terms of total value. However, the average off-farm earnings of these operators was much higher than for the other farmers in the area.

1/ (24)

Residential farmers	862
Estimated off-farm income	$1,164,400
Value of agricultural produce sold	60,460
Total Income	$1,224,860
Average Income	$1,421

Many of the residential farmers have pension and investment incomes to supplement the above two sources.

Consequently, the remaining 8,073 farm operators earned approximately $32.0 million in total or an average of $3,960 per farmer. This was still far below the equivalent Alberta average of $6,795 per farm operator.

While the total number of farm operators decreased by 6.4% between 1956 and 1961, the total number of farmers obtaining part-time work increased from 2,609 to 3,333 or by 27%. Either more work is available or the farmers require more part-time work to enable them to continue farming. In 1960, the 3,333 farmers were employed in the following occupations:

Table 46 OFF-FARM WORK* BY OCCUPATION
C.D. 15 - 1960-61

Custom Work	337
Logging	576
Fishing and Trapping	49
Construction	761
Truck or Bus Driver	437
Factory Production Work	40
Clerical	97
Other	1,184
Not Stated	120
TOTAL	3,601

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* Operator may report more than one kind of work.

1/ (24)

Of the total farm operators, over 1/3 reported some type of part-time work in 1961. Of this group, about 60% worked from one day to five months, and 40% worked from five months to one year. There is therefore a substantial demand for off-farm work to supplement income from farming.

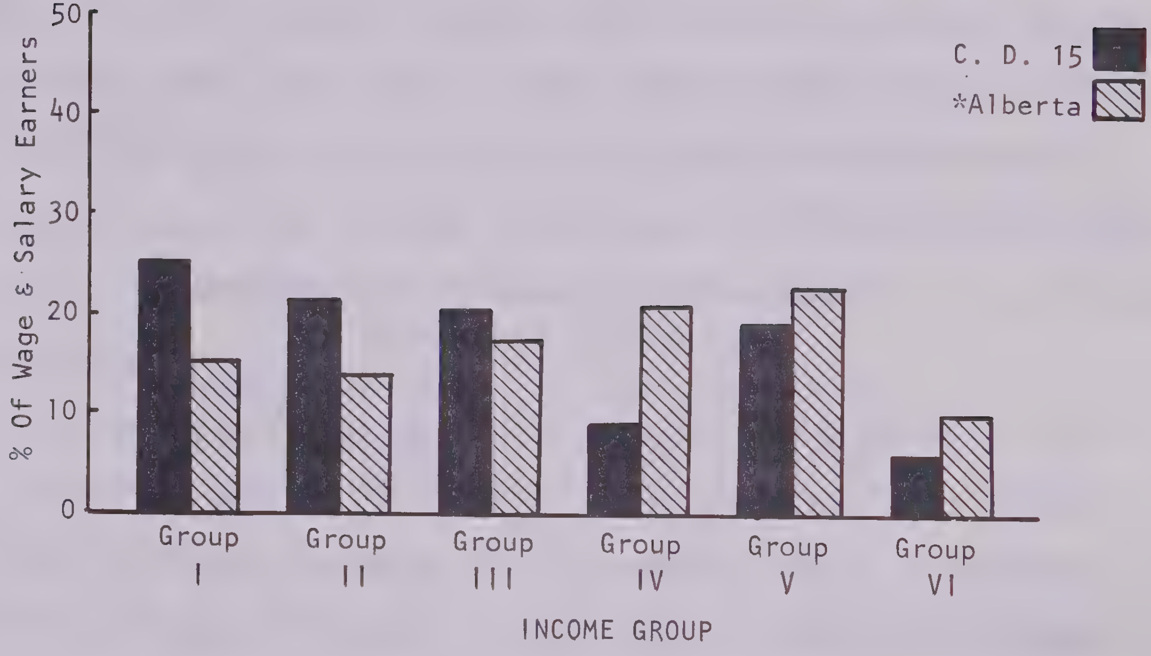
Note: A detailed treatment of the distressed farmers in this area can be found in: Indexes For Low Income Areas, by Leo Regehr, Rural Development Research Branch, Economics Division, Alberta Department of Agriculture. Further information on the farm population can be found in: Agriculture in C.D. 15, by Leo Regehr, Rural Development Research Branch, Economics Division, Alberta Department of Agriculture.

Wage and Salary Earners (Farm & Non-Farm)

An analysis of wage and salary payments illustrates the differences in income distribution among the paid employees in C.D. 15. The following graph shows the salient features of the distribution of these income payments for the 11,032 wage earners covered in the survey. (Note: there were a total of 13,340 wage earners in the whole census division, but 2,008 for one reason or another, were not included in the income distribution values.)

Figure 11

TOTAL WAGE EARNERS BY INCOME GROUP - 1961



*Excludes C. D. 15 Figures.

Group I - Under 1,000
Group II - 1,000-2,000
Group III - 2,000-3,000
Group IV - 3,000-4,000
Group V - 4,000-6,000
Group VI - 6,000+

Briefly, proportionally more employess were in the lower income groups in C.D. 15 than in the rest of Alberta. About 65% of the total wage and salary earners in C.D. 15 earned less than $3,000 in 1961, [1/] compared with about 46% in the rest of Alberta. While the above graph refers to the distribution of the total wage earners, similar situations exist for the smaller breakdowns of this total.[2/] In all of the smaller breakdowns, (i.e. urban male, rural non-farm male, urban female workers) it is clearly shown that a larger portion of the wage earning labour force is in the lower income subdivisions.

The above mentioned income distribution results in the following differences in average earnings:

Table 47 AVERAGE EARNINGS* OF WAGE & SALARY EMPLOYEES
C.D. 15 & ALBERTA** [3/]

	MALE		FEMALE	
	C.D. 15	Alberta	C.D. 15	Alberta
Total	2,846	3,733	1,815	2,001
Urban	3,447	4,006	1,796	2,029
Rural	2,470	2,740	1,833	1,827
Non-Farm	2,745	3,149	1,888	1,857
Farm	1,778	1,936	1,687	1,764

* Twelve month period ending June 1, 1961

** Includes C.D. 15 figures

The above table indicates that the wage differential between C.D. 15 and Alberta is fairly substantial (as much as 15% for some divisions) and that it is much greater for men than for women.

[1/] June, 1960 to June, 1961.

[2/] See appendix for other graphs.

[3/] (20)

The following section presents more recent income statistics which are taken from reports of the Department of National Revenue covering income tax returns. Table 48,(Page 103)provides the figures for C.D. 15 and Alberta for recent years. Of note is the number of people who file returns. In 1961, 16,521 people filed returns. In the same year there were approximately 25,050 people in the labour force in C.D. 15. Therefore, there were over 8,500 people who did not file an income tax return. Many of these latter people would be farmers. Historically, for Alberta in general, only about one quarter of the farmers file income tax returns. If this applies to C.D. 15 as well, then about 6,600 farmers would not have filed a return. The remaining 1,900 people who did not file returns would likely be those who worked part-time and/or made less than $2,000 per year.

The table on the following page indicates the income trends in the region. Average wage and salary earnings of those with taxable incomes rose from $2,908 in 1957 to $3,595 in 1966, compared with $3,107 and $4,084 for Alberta for the same period. Thus the gap between the C.D. 15 and Alberta averages increased slightly over the period. However, there is an important point to note. From 1957 to 1964, the number of people with taxable income increased from 7,300 to almost 16,000 or an increase of 120% in the census division, compared with 51% for Alberta. This brings out some interesting points: The large increase in number of taxable returns in C.D. 15 implies that additional employment opportunities were available, in particular when compared with Alberta as a whole. It is impossible to determine from the table whether the people in the area were able to obtain additional employment; or if new vacancies were filled by immigration; or if the additional returns resulted from a general increase in income levels to the people in the area. Since the population increased by 16%, it is likely that all three of the above had a part to play in the increase in number of taxable returns.

The average total income of those with taxable income rose from $3,471 in 1957 to $4,453 in 1966 in C.D. 15. The Alberta average moved in the same fashion, (from $3,820 to $5,114) although the gap between the census division and the province widened.

Non-taxable returns did not exhibit any particular trend in terms of average wages and salaries, or average total income. However, the number of people filing returns showed an increase. One point to note is that in 1966 in C.D. 15, 25,547 people filed returns. This was an increase of around 55% over the 1961 figure. During this period, the population increased by only 15%, so it appears that employment opportunities (as reflected by tax returns) increased substantially.

One other striking difference between the income statistics in C.D. 15 and Alberta is the relationship between the number of taxable returns and non-taxable returns. Throughout the period in C.D. 15, the number of non-taxable returns comprised over 40% of the total returns. In Alberta, the non-taxable returns made up less than 26% of the total returns. This appears to support other evidence suggesting that C.D. 15 has a higher proportion of people in the lower income brackets.

An indication of trends in total income growth is presented in the next table. These values include all income reported to the income tax division. Coverage would be fairly complete for non-farm people but only a portion of the farm operators would be included. The column labelled 'Other Income' is composed of gross farm sales (53%) plus business (21%), professional (13%),

Table 48

INCOME STATISTICS
1957 - 1966 C.D. 15 & ALBERTA [1]

(TAXABLE RETURNS)

	No. of Returns		Average* Wage & Salary		Average* Total Income	
	C.D. 15	Alberta	C.D. 15	Alberta	C.D. 15	Alberta
			$	$	$	$
1957	7,300	279,879	2,908	3,107	3,471	3,820
1961	9,441	319,459	2,747	3,477	3,687	4,292
1962	10,643	333,089	2,677	3,583	3,675	4,420
1963	11,172	339,798	3,064	3,711	4,048	4,509
1964	11,833	361,187	3,479	3,764	4,236	4,673
1965	12,590	388,259	3,327	3,920	4,229	4,847
1966	15,965	435,467	3,595	4,084	4,453	5,114

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* Average per taxable return.

Table 49

INCOME STATISTICS, 1957 - 1966
C. D. 15 & ALBERTA (NON-TAXABLE RETURNS) [2]

	No. of Returns		Average** Wage & Salary		Average Total Income	
	C.D. 15	Alberta	C.D. 15	Alberta	C.D. 15	Alberta
			$	$	$	$
1957	6,560	108,160	681	659	1,029	1,142
1961	7,080	112,556	651	740	1,433	1,269
1962	6,662	115,061	692	770	1,352	1,288
1963	7,723	116,701	632	748	1,263	1,221
1964	8,295	116,936	831	749	1,101	1,249
1965	9,103	117,690	739	701	1,188	1,143
1966	9,582	119,014	824	659	1,151	1,129

** Average per Non-Taxable return.

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[1] (13)

[2] Ibid.

dividends, interest and other income. In 1966, gross farm sales amounted to $42 million of which an estimated $9 million was reported in the following values:

Table 50 GROSS INCOME REPORTED BY RESIDENTS OF C.D. 15
($000)

	Wages and Salaries	Other Income	Total Income
1961	30,541	14,415	44,956
1962	33,105	15,009	48,114
1963	39,118	15,863	54,981
1964	48,054	11,206	59,260
1965	48,604	15,455	64,059
1966	65,295	16,835	82,130

One important point to note is the rapid rise in wage and salary earnings. During the five year period, income from this source more than doubled. After allowing for inflation, this would represent an increase of 1 3/4 times the 1961 gross wage and salary level.

Another point to note is the relative stability of the 'other income' category compared with the wage and salary statistics. Professional income would likely exhibit a rising trend because of the nature of the occupation. Dividends, interest and other income are too small to significantly influence the total picture. This leaves gross farm sales and business income, making up 75% of this category, to account for the lack of income growth. A large portion of the business income arises from establishments in the urban centres. With the growth in many of these centres (Grande Prairie, Peace River, High Prairie) it is unlikely that in total, this income would decrease, particularly in view of the large increase in service receipts noted in a previous section. This would leave the gross farm sale value to account for most of the lack of growth. After adjusting for inflationary income and price increases, the 1966 'other income' figure was just barely higher than the 1961 value. However, since only 25% of farmers report, no conclusions can be made to suggest why the gross farm sales reported remained static, particularly since census reports an increase in gross farm sales from 1961 to 1966 of from $27 million to $42 million.

To sum up:

1) - relatively rapid expansion of employment opportunities illustrated by the large increase in taxable returns, and in total returns filed -

2) - employment opportunities paid average wages and salaries -

3) - relatively more rapid expansion of total income reported in C.D. 15 than in Alberta, (155% increase in C.D. 15 compared with 98% increase in Alberta from 1957-1966) as indicated by returns filed - That is, gross income reported on income tax returns increased by the above percentage.

Apparently, the economy of C.D. 15 is growing more rapidly than that of Alberta in general. However, these statistics do not differentiate between rural and urban, or farm and non-farm growth. Therefore, the area could have an adequate total growth rate but have an increasingly unequal distribution of income, particularly between the urban and rural areas.

APPENDIX

TABLE 1A SAWTIMBER VOLUME BY FOREST C.D. 15[1]

MM of fbm - 10'' + D.B.H.

	White Spruce	Balsam Fir	Pine	Total Coniferous	Poplar
Grande Prairie	6,314	167	3,832	10,313	8,877 [2]
Peace River	4,439	132	1,121	5,692	6,558 [2]
Slave Lake	7,650	276	2,334	10,260	15,159 [2]
Footner	7,088	77	808	7,973	8,264
Lac La Biche [1]	181	9	52	243	225
Athabasca [1]	36	2	3	41	77
Edson [1]	648	147	1,090	1,885	215 [2]
Whitecourt [1]	2,054	165	1,349	3,568	1,419
TOTAL	28,410	976	10,589	39,976	40,793

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[1] (10)

[2] Only part of these forests included in C.D. 15. These figures are from an area approximately co-terminous with the census division boundaries.

[3] No poplar estimates were made for some areas within these forests.

TABLE 2A PULPWOOD VOLUME BY FOREST

C.D. 15 [1]

M of Cords (4" - 9" D.B.H.)

	White Spruce	Black Spruce	Balsam Fir	Pine	Total Coniferous	Poplar
Grande Prairie	7,937	2,919	558	14,947	26,361	16,530 [2]
Peace River	6,870	2,335	617	7,294	17,116	21,369 [2]
Slave Lake	10,987	4,506	1,022	6,508	23,023	23,961 [2]
Footner Lake	13,098	3,397	450	2,795	19,740	25,337
Lac La Biche [1]	287	188	43	178	696	553
Athabasca [1]	65	38	9	10	122	235
Edson [1]	2,039	198	540	5,164	7,940	843 [2]
Whitecourt [1]	3,593	722	525	4,658	9,498	2,866
TOTAL	44,874	14,303	3,764	41,553	104,494	91,694

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[1] (10)

[2] Only part of these forests are in C.D. 15. Above figures are from an area approximately co-terminous with the census division boundaries.

[3] No poplar estimates were made for some areas within these forests.

TABLE 3A CRUDE OIL PRODUCTION, ALBERTA & C.D. 15 [1/]

Year	Production ('000,000 Barrels)	Value ($000,000)	C.D. 15 as % of Alberta
1956	143.9	353.6	1.7
1957	137.5	355.6	2.4
1958	113.3	283.3	3.7
1959	130.0	306.9	5.6
1960	130.5	302.8	9.1
1961	157.8	355.5	11.6
1962	165.1	379.8	13.0
1963	168.2	416.8	15.0
1964	175.4	450.2	18.5
1965	184.3	474.4	24.8
1966	203.5	524.4	29.2
1967	241.4	622.8	32.0

[1/] (32)

TABLE 4A PRINCIPAL MANUFACTURING STATISTICS 1/
C.D. 15 - 1956-1966 2/

Year	Firms No.	Employees No.	Salaries and Wages $	Cost of Materials $	Net Value of Production $	Value of Factory Shipments $
1956	24	314	791,205	1,604,940	1,310,020	3,038,132
1957	26	437	1,288,006	2,676,471	2,100,156	4,952,017
1958	20	250	865,610	2,728,615	1,677,663	4,515,841
1959	23	378	1,333,958	3,518,303	2,588,863	6,289,175
1960	34	438	1,435,066	3,779,937	2,517,364	6,508,570
1961	29	450	1,475,492	4,055,579	2,962,424	7,216,673
1962	32	490	1,605,443	4,351,136	3,225,610	7,775,266
1963	39	525 3/	1,636,598 3/	6,211,497	3,729,911	10,182,156
1964 4/	41	661	2,329,262	5,482,237	4,046,418	9,753,131
1965	42	604	2,365,730	4,043,197	4,588,171	8,867,582
1966	43	626	2,741,008	4,712,737	4,652,112	9,629,638

1/ (2)

2/ Excludes sash, door and planing mills and sawmills.

3/ Excludes administrative staff in employment and wage figures.

4/ Includes 2 sash, door and planing mills.

TABLE 5A

VALUE OF BUILDING PERMITS ISSUED
CENSUS DIVISION 15
1956 - 1967 1/
($000)

Year	Industrial	Institutional and Government	Residential	Commercial	Total
1956	150	888	1,474	521	3,036
1957	220	1,046	1,413	713	3,394
1958	146	649	1,805	457	2,958
1959	589	677	1,620	632	3,518
1960	191	2,169	1,668	675	4,703
1961	63	1,389	2,597	936	4,985
1962	81	2,786	3,744	1,446	8,057
1963	492	1,340	4,504	2,121	8,457
1964	766	3,820	3,254	2,136	9,976
1965	380	3,298	4,065	2,559	10,302
1966	1,035	4,076	4,023	2,147	11,281
1967	522	3,266	4,067	3,105	10,960

1/ (1)

TABLE 6A

BUILDING PERMIT INDEXES 1/
C. D. 15
1956 - 1967 2/

Year	Industrial	Institutional and Government	Residential	Commercial	Other	Total
1956	100	100	100	100	-	100
1957	147	118	96	137	-	112
1958	97	73	122	88	-	97
1959	393	76	110	121	-	116
1960	127	244	113	130	-	155
1961	42	156	176	180	-	164
1962	54	314	254	277	-	265
1963	328	151	306	407	-	279
1964	511	430	221	410	-	329
1965	253	371	276	491	-	339
1966	690	460	273	412	-	372
1967	348	368	276	596	-	361

1/ (1) 1956 = 100

2/ Dominion Bureau of Statistics, Building Permits, Catalogue No. 64-001.

TABLE 7A INCOME OF PEOPLE NOT IN FAMILIES

NON-FARM - 1961 [1]

Income Group	NUMBER Alberta	NUMBER C.D. 15	PER CENT Alberta	PER CENT C.D. 15
Without Income	4,738	281	5.0	7.1
-$1,000	27,137	1,383	28.4	35.0
$1,000 - 1,499	10,010	432	10.5	10.9
1,500 - 1,999	7,791	334	8.2	8.4
2,000 - 2,499	8,860	327	9.3	8.3
2,500 - 2,999	7,179	283	7.5	7.2
3,000 - 3,999	15,887	487	16.7	12.3
4,000 - 4,999	6,666	208	7.0	5.3
5,000 - 5,999	3,029	85	3.2	2.2
6,000 - 7,999	2,408	62	2.5	1.6
8,000 - 9,999	8,829	40	0.9	1.0
$10,000 and up	807	29	0.8	0.7
TOTAL	95,341	3,951	100.0	100.0

Average Income - C.D. 15 - $1,926

- Alberta - $2,285

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[1] (21)

TABLE 8A

NON-FARM FAMILY INCOME
ALBERTA & C.D. 15 - 1961 1/

Income Group	NUMBER		PER CENT	
	Alberta	C.D. 15	Alberta	C.D. 15
-$1,000	10,963	1,129	4.5	12.5
$ 1,000 - 1,999	16,986	1,060	7.1	11.7
2,000 - 2,999	21,611	1,141	9.0	12.6
3,000 - 3,999	35,105	1,574	14.7	17.5
4,000 - 4,999	40,019	1,328	16.7	14.7
5,000 - 5,999	34,753	970	14.5	10.7
6,000 - 6,999	25,606	619	10.7	6.8
7,000 - 7,999	17,185	381	7.2	4.2
8,000 - 9,999	17,943	424	7.5	4.7
10,000 -14,999	13,355	284	5.6	3.1
$15,000 and up	6,081	136	2.5	1.5
TOTAL	239,607	9,046	100.0	100.0

Average Non-Farm Family Income - Alberta - 5,602

C.D. 15 - 4,361

1/ (21)

Figure 1A

WAGE EARNERS BY INCOME GROUP - 1961
URBAN FEMALE

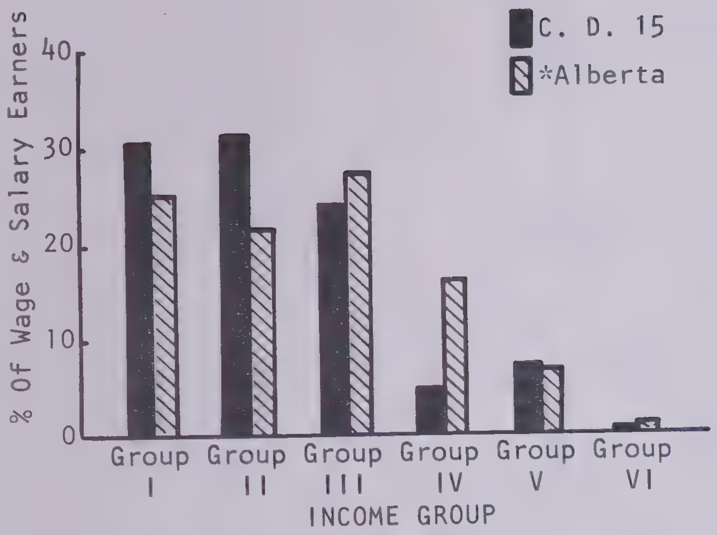


Figure 2A

WAGE EARNERS BY INCOME GROUP - 1961
TOTAL FEMALE

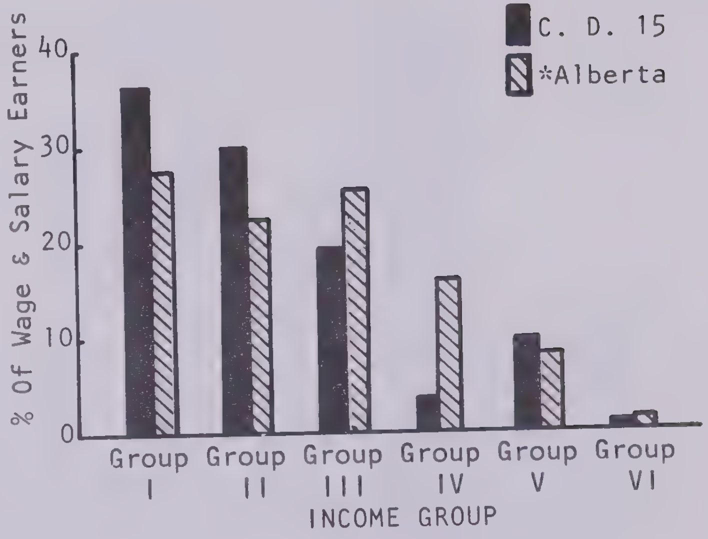
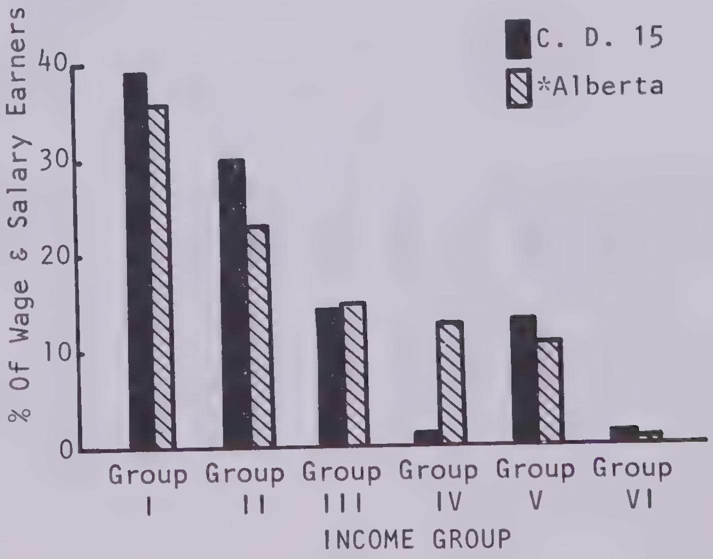


Figure 3A

WAGE EARNERS BY INCOME GROUP - 1961
RURAL NON-FARM FEMALE



*Excluding C. D. 15 Figures.

Source (20)

Figure 4A WAGE EARNERS BY INCOME GROUP - 1961
URBAN MALES

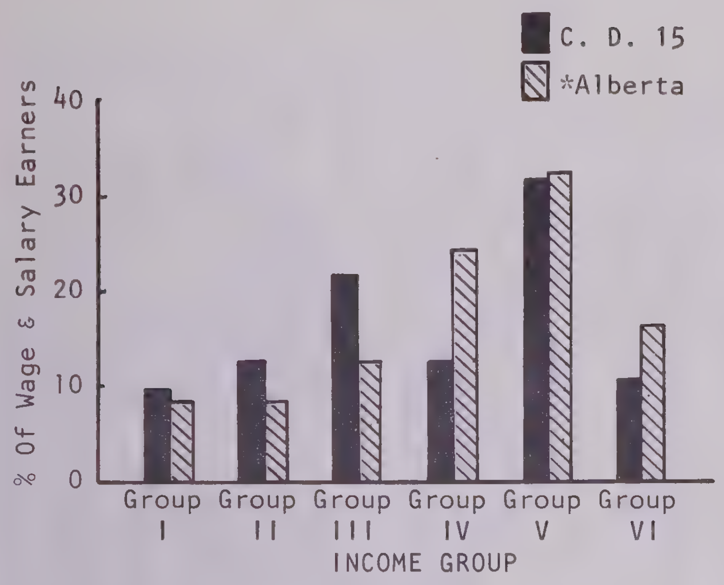


Figure 5A WAGE EARNERS BY INCOME GROUP - 1961
RURAL FARM MALES

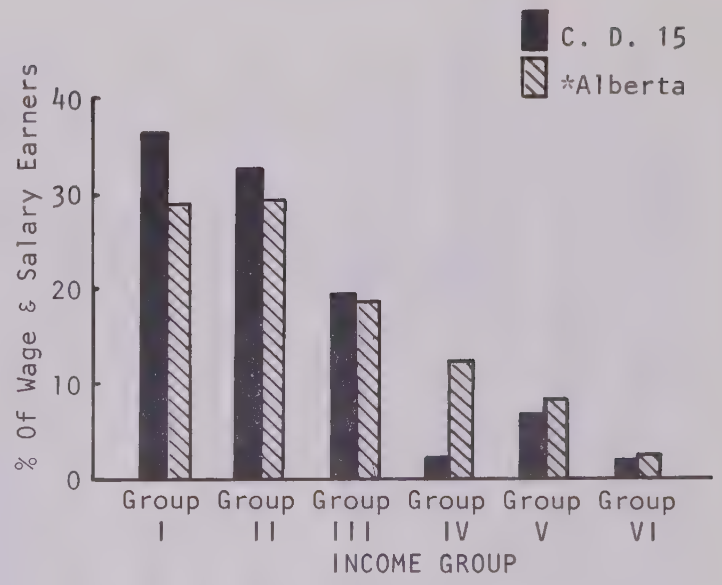


Figure 6A WAGE EARNERS BY INCOME GROUP - 1961
RURAL NON-FARM MALES

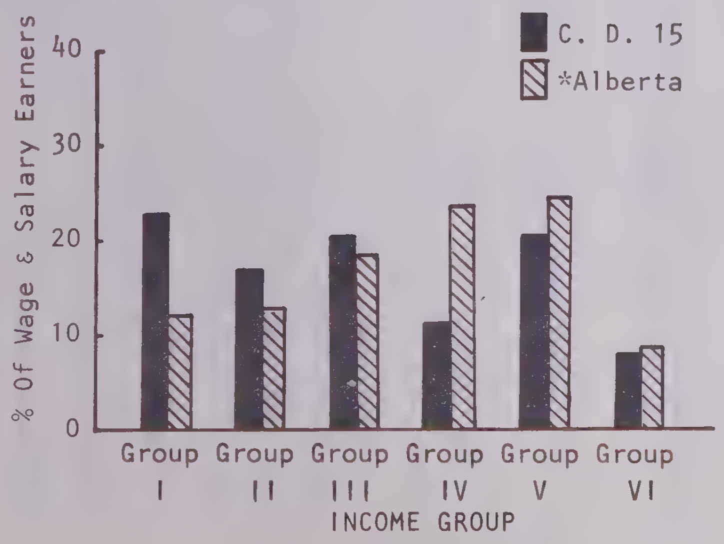
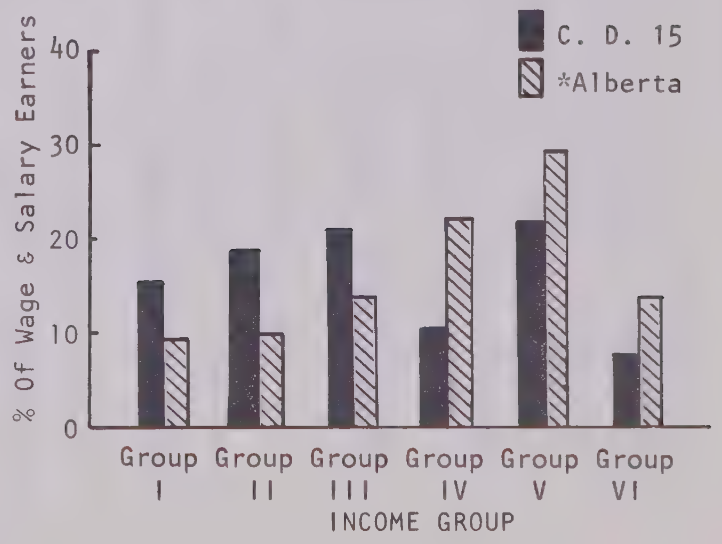


Figure 7A WAGE EARNERS BY INCOME GROUP - 1961
TOTAL MALE



*Excluding C. D. 15 Portion.
Source (20)

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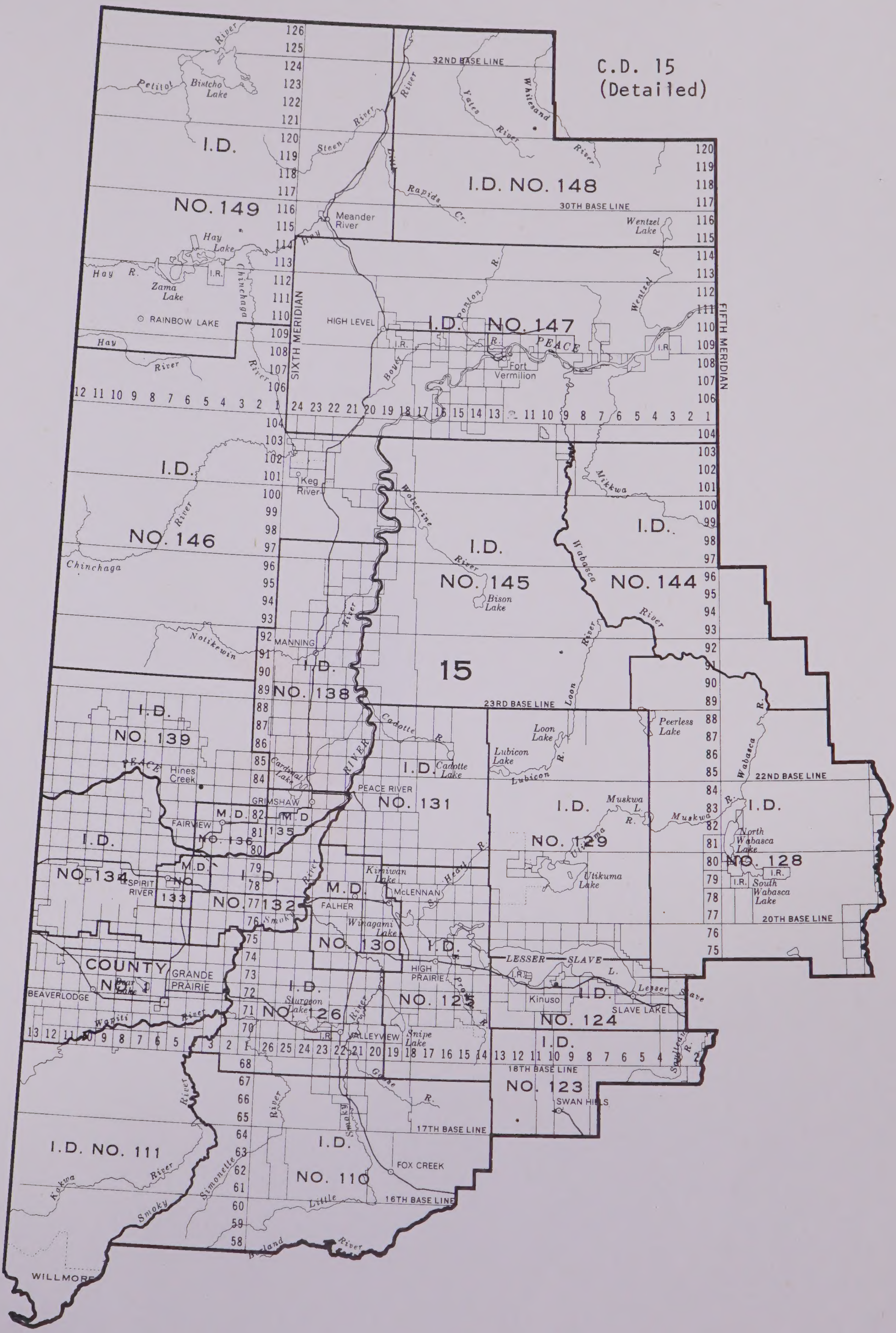
- NOTES -



C.D. 15
(Detailed)